THE MARKET FOR PHYSICIANS: A COMPARATIVE STUDY OF RURAL AND URBAN UTTAR PRADESH

Thesis Submitted to Jawaharlal Nehru University
for the Award of the Degree of

DOCTOR OF PHILOSOPHY

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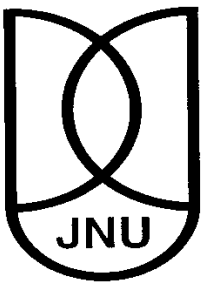

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DECLARATION

I, Nicky Naincy, declare that this thesis entitled **"The Market for Physicians: A Comparative Study of Rural and Urban Uttar Pradesh"** submitted by me for the award of the degree of **Doctor of Philosophy** of Jawaharlal Nehru University, is my bonafide work. I further declare that the thesis has not been submitted for any other degree of this university or any other university.

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We recommend that this thesis be placed before the examiners for evaluation.

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Content

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Abbreviations

PHC	Primary Health Centre
CHC	Community Health Centre
SC	Sub-Centre
RCH	Reproductive & Child Health
OECD	Organisation for Economic Co-operation and Development
RSE	Rising Southern Economies
WB	World Bank
WHO	World Health Organisation
HRH	Human resource for Health
UHC	Universal Health Coverage
MDG	Millennium Development Goal
SDG	Sustainable Development Goal
LMIC	Low and Middle Income Countries
HCT	Human Capital Theory
CPMT	Combined Pre Medical Test
UPCPMT	Uttar Pradesh Combined Pre Medical Test
MCI	Medical Council of India
MHRD	Ministry of Human Resource Development
AISHE	All India Survey of Higher Education
CMO	Chief Medical Officer
AIPMT	All India Pre- Medical Test
NEET	National Eligibility cum Entrance Test
MBBS	Bachelor of Medicine and Bachelor of Surgery
MD	Doctor of Medicine
MS	Master of Surgery
LDC	Least Developed Countries
EAG	Empowered Action Group
NITI	National Institute for Transforming India

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Chapter One:
Introduction and Overview

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1.1 Introduction

The research literature in health economics has recognised that production, supply and availability of health workers have been a prerequisite for attaining the health related targets for any country. Among all others, the role of health worker is more important and widely recognised by policy makers and health economists (Vujicic & Zurn 2006; Anand & Barnighausen, 2007) as direct interaction is needed between patient and health worker to get the service delivered.

Anand & Barnighausen (2012) asserted in their article that despite many other important components of health care system, undoubtedly health workers occupy a central position because they act as a mean to achieve the objective of provision of health care (Anand & Barnighausen, 2012).

Of late, researchers and governments from across the world are engaged in identifying and bringing out some effective solutions to the problem of health workers' inadequacy, maldistribution and quality of their health services. In most of the low and middle income countries (henceforth LMICs), health services have been consistently suffering from malfunctioning and among various factors, like availability and distribution of health workers are one of the major concerns. Kruk et al., (2010) explicitly mentioned that progress on health related targets for achieving the objectives of Millennium Development Goals (MDGs)[1] is largely hampered by inadequacy of health workers in these regions (LMICs). Studies have established the link between human resource for health (henceforth HRH) and health status of the population. HRH comprises physicians, nurses, midwives and other paramedical staff to ensure the access and utilisation of health services across the population in various spatial

[1] United Nations Development Programme (UNDP) has launched the first ever time bound goals for addressing the issues like poverty, education, health, gender equality, hunger, environmental sustainability with indicators in September, 2000. This initiative was targeted mainly for LDCs and other developing countries and a fifteen year timeline was set from 2001, to monitor the progress over their assigned goals and targets. Among its eight goals, three are directly related with the health of the population in various forms. Ranging from reduction in IMR, MMR, U5MR to vaccination coverage, monitoring of reproductive health and reduction in prevalence of HIV/AIDS, Tuberculosis, Malaria with other preventable diseases, MDGs have paid substantial attention to universal coverage of health for the population in poor and developing countries. Termination of MDGs in September 2015 has led to formulation of Sustainable Development Agenda (SDGs) having a more extensive and overarching coverage area with a total of 17 goals and 169 targets, interlinked with each other.

settings. Although, it is not only the doctors[2] who are the only requirement to maintain the health care system and other auxiliary staff are equally important. However physicians occupy a pivotal role in leading the quality and accessibility of health services in any region because of the fact that they are central to deciding and providing the treatment a patient requires. This role of physicians makes them an "agency" in providing the health services (Mcguire, 2000) and thus imparts them the power to influence the decision of the consumers (patient) of health services. Apart from this agency approach, the labour market for physicians is derived from the market for medical services and the market for medical education (Sorokin 1984; WB 2014) and thus bears different peculiarities from physicians being the sole agency to determine the supply of labour. Perhaps because of this factor, the role of physician becomes more significant than of all others. The higher skill level of physicians in comparison with those of the other paramedical staff differentiates the costs and benefits of doctors entering into the market of health care. It has been observed that extensive literature is devoted to discuss the human resource crunch in heath sector, either because of their underproduction and maldistribution or emigration to foreign countries. On the other hand, limited studies are conducted in the past to study the interplay of market forces in the provision of health care (Semenov et al., 1996). Some of the economic models that are applied in health sector, basically concern with estimating the aggregate demand for health workers, while a few analyses have used the framework of labour economics to study the dynamics of health worker's labour market, especially in LMICs (Anand &Bernighausen 2012; Mcpake et al. 2013; WB 2014).

Health sector as a whole is considered as a labour intensive sector because technical upgradation of health services depends on the skill of health workers. However, putting the focus only on production of health workers while neglecting the other significant factors which may influence the availability of already produced human resource provides a lopsided view of health sector to the policy makers. The behaviour and preferences of health workers, which are the influential part of their labour market dynamics, have been quite often neglected in earlier studies on health sector. Within the ambit of health care network, studies related to particular health personnel like physician, are even more limited. It has been mentioned earlier that policy makers have mostly relied upon the augmentative interpositions to address the non-availability of health workers - which alone did not prove to be much effective (WB, 2014). This is based on the assumption that more health workers to the

[2] The term "Doctors" and "Physicians" are used interchangeably in colloquial expressions and literature as well, although physicians are more suited for specialist doctors having minimum MD or MS qualification.

population will be a practical measure to enhance the health of the population. But as Vujicic & Zurn (2006) have noted, studies which promote the scaling up of interventions, ignore the application of health and labour economics while understanding the functioning of labour market of health workers. Insights from economics to understand the labour market of high skilled health workers becomes pertinent in order to address the issue of health worker shortages, their representation in underserved areas, productivity and performance.

A general and good deal of literature is available which discusses the labour supply of different kinds of workers (see Blundell & MaCurdy 1999; Blundell et al., 2007), but in particular case of physicians- their labour supply has not received much attention despite the concern for their shortages. Most of the existing studies are conducted for the developed countries like US, UK, Norway or Australia. Further, labour supply decisions of nurses have received more attention rather than physicians because of varied reasons. The availability of longitudinal data sets for the wage rate facilitated empirical analysis of nurses' labour market, which is not easily available in case of physicians. Dual practice is more prominent in case of physicians, which does not provide accurate information about their earnings. Another factor is the level of specialisation which has a significant effect on their wage rate and earnings, a factor not much observed for nurses. However, for better understanding of physicians' decisions to supply their labour in different settings like rural and urban area and also for different sectors like public and private, it is important to look for both pecuniary and non-pecuniary aspects which may affect their decisions. It will be interesting to look further as to how various factors affect and determine the decisions of male and female doctors to work in different settings.

This is not to infer that the literature is devoid of studies conducted for physicians, in fact some studies have attempted to examine physicians' labour supply with the help of reduced form model, based on the assumptions of utility maximisation theoretical framework. Applying this framework, Thornton (1998) in his study estimated the wage elasticities for self-practicing male physicians and did not find any evidence for backward bending supply curve of labour. He further concluded that medical fees do not bear any significant relation with the variations in supply of doctors. Some studies found that the value of wage elasticities are more positive for privately practicing physicians (self employed or in dual practice), but insignificant (small) wage elasticities for those who were employed by any agency like government (Kalb et al., 2015).

Further it has been observed that most of the studies look up health sector market as a whole and analyse it at the macro-level. Although the literature has recognised the

importance of physicians in ensuring the quantity, allocation, performance and resources in health care system, but the principles of labour market has not been applied to look into various other factors and their distribution within several interdependent markets. These markets may coexist with other and more likely to be seen in case of urban rural distribution (internal migration), across the global boundaries (international migration), within the sectors (public and private), skill mix of health workers, and community versus specialist care.

Nonetheless, Squires et al (2016) in their recent study pointed out that macro-level studies on production of HRH are scarce and those which are available, mostly come from high income developed countries. Literature on HRH production concentrates itself to the measures of supply augmentation and thereby mostly derived from the policy documents or interventions. If we examine at the micro-level, then supply is being studied through the variables like career expectations of medical students, scarcity of teachers at the institutional level and other dynamics of medical education system which can impact upon the supply of HRH (Burch et al, 2011). However it needs to be explored that medicine as a profession has in itself created a demand whereby prospective medical students try to make into this profession. This image is created because of its association with social image, status, stability of career with fixed salary and several other indirect benefits. Demand side researches are mostly carried out from the viewpoint of demographic and epidemiological profiles of the population, therefore neglecting the fact as how profession has created the demand for medical personnel. Even within the medical profession, there is observable demarcation in terms of socio-economic status. In this respect, physicians enjoy a kind of elite status among all other health workers. This is reflected in case of nursing, which has altogether different socio-economic dynamics if compared to physicians (Squires et al, 2011). It has been argued that medicine is seen as a socially elite profession almost everywhere because physicians enjoy more authority than any other health personnel. On the other hand, nursing has a kind of negative public image because of several factors like lower salary structure, improper working environments, lesser career mobility, higher level of harassment because it includes mostly female workers. As Squires et al (2016) argues that these aspects along with the social mores for not accepting it as a reputable career for women have impacted upon the production of nurses.

The general argument coming out of this discussion is about the ignorance of various macro level contextual factors while exploring the production of HRH (either nurses or physicians). These macro level factors may include the political, social structure of the society, economic indicators of the nation and also how these macro-level factors may

fabricate the micro-level factors for the working of individual health personnel. Therefore some of the recent researches in this domain suggest for using complexity theory as a framework to analyse the interplay of macro and micro level factors to analyse the production and retention of health personnel in any particular setting (Squires et al, 2016). They argue that through this complexity theory the transformation of macro level factors from micro-level factors can be explained. The analysis can be context sensitive and may employ causative mechanism for exploring the inter-linkages between micro-level and macro-level factors (Westhorp, 2012).

While discussing about the macro-level factors which operate in global labour market, international mobility of high skilled health personnel remains an important variable because of various reasons. This macro-level variant has been operating both at the demand and supply side levels. Countries having high income and better working opportunities have been attracting physicians and nurses from lesser developed nations and LMICs. The labour market dynamics of high income countries (emerging out of their changing demographic profile) generates the demand for high skilled workforce, which they are not able to fulfil thereby, resort to the other nations of the world, especially developing ones. In this scenario, health workers from countries like India, Philippines and from other Asian, Pacific and African countries try to enter into the labour markets of high income or economically developed countries. As critics argue because of this dynamic interplay of demand and supply forces, countries like India and Philippines train their health professionals specifically for this purpose, which eventually deprive off their own rural and underserved areas from the availability of health services (Henderson & Tulloch, 2008). Training of health personnel involves huge institutional and private cost as well. Literature in general, argues that higher pay have played a major role in attracting physicians and nurses from developing countries leaving behind the better living standard and working conditions as other important reasons. But recent researches have observed and started studying the other factors which might play an important role in determining the working decisions of health personnel while deciding to go abroad. However, these recent studies pronounced that economic factors do play an important role, in fact major role in influencing the motivation of health worker to go abroad nevertheless, they do not account for the only reason to move abroad. Vujicic et al. (2004) in their study, analysed the wage as variable in health personnel's migration, but at the same time concluded that non-wage factors may prove more helpful instrument in controlling the migratory flows of physicians and nurses. The same argument is pronounced in WHO report and select country studies (WHO, 2011).

Vujicic et al. (2004) argued about the wider difference between the wages of destination and source countries, and pointed that only increasing the wages to retain health personnel at home country is therefore not sufficient or even very effective measure. Study of Kingma (2003) have shown that in developed countries like UK and Geneva, nurses were more responsive to non-financial incentives, which included fulfilment of job aspirations and other motivational factors like self esteem. Therefore, it can not be implied solely that shortages of health workers have been persistent due to economic factors only.

Other studies in this area suggested in bringing non-monetary incentives to improve the working scenario of health workers in terms of their performance and motivation (Mathauer & Imhoff, 2006). Some case studies also indicated those health workers, who come from rural areas, feel comfortable in working in underserved areas. In this respect, one of the studies by Stilwell (2001) on Zimbabwe showed, that despite of discouraging working conditions in rural and remote areas, health workers preferred to work because of their familiarity with these areas. Among various other factors like socio-economic background of health workers, she observed that management and good leadership and other organisational support play important role in their deployment. Further studies done over these aspects have endorsed more or less the same findings, whereby they asserted that to retain health personnel especially physicians in desired areas, require the role of non-financial incentives in addition to financial ones (Stilwell et al. 2004; Fritzen 2007).

Shortage of health workers has been a concern for Indian health care system (WHO, 2006). This shortage is observed across the regional level. Another important issue pointed by WHO in its recent study entitled "The Health Workforce in India" released in June, 2016 is related to the problem of unqualified doctors or quacks which mostly occupy the rural areas (WHO, 2016). As per this report, during 2001, 57 percent of doctors who declared themselves allopathic practitioners were devoid of any kind of medical qualification. Among these self-proclaimed allopathic physicians, only 31 percent had a qualification up to secondary school level. This situation was more alarming for rural India, whereby only 18.8 % doctors had required medical qualification. Print media and other sources have quoted the report of WHO to bring this issue into the knowledge of government and administration. This report indicates toward the failure of governance of HRH in India at various levels.

1.2 Statement of Problem

Indian health care framework recognises the importance of health worker, but most of the studies have addressed the issue of access in terms of utilisation of health services. In Indian

case, a health worker's importance is situated within the aggregate demand and supply based framework which is primarily meant to address the issue of scarcity of health workers for utilisation of health services (Say & Raine, 2007). Furthermore, the access and utilisation of services has been conceptualised in terms of demand side variables in a more extensive manner in different settings by using household surveys (Berman 1998; Kumar & Praksah 2011). In addition, the debate on Indian health care and physicians are mostly demarcated in favour of public, private or mix provision of their services. From various case studies, reports, surveys and other empirical literature, it has been figured out that they are mostly prescriptive, or in technical terms it can be argued that they have adopted a need based and normative approach to improve the health care system (Akin et al. 1987; Bossert 1998; Uplekar 2000).

Ramani et al., (2013) in their study argued that working of health personnel and also the preferences of prospective medical students depend upon the combination of pecuniary and non-pecuniary factors and not for any single incentive. Study carried out in Maharashtra on rural health professionals, by Mishra et al., (2011) mentioned about mental factors like overload of work, more stress at workplace as confounding factors which effect doctors and their services. They also found political factors for example, bureaucracy, favouritism and discrimination to influence the motivation of doctors to serve in rural areas. The production of physicians at medical colleges has been considered as the only intervention to correct the imbalance between supply and demand. Factors which influence doctors' motivation to work have not been analysed much and requires extensive research. Shattuck et al., (2008) through their extensive literature review concluded that financial incentives are not the only factor which influences the decision of physicians to deliver their services, although they might be country and context specific. They argued that financial incentives, career progression and organisational set up are the core factors which work as motivational factors for health workers. Barnighausen & Bloom (2009) provided the theoretical and empirical review of existing research whereby they found that most of them had analysed the impact of financial incentives programmes on improvement of health workers' performance. These studies are mostly conducted in context of developed countries. In Indian context, literature survey could not find any study which was exclusively concerned with physicians and simultaneity of various contextual factors falling into the category of pecuniary and non-pecuniary variables.

Peters et al., (2010) conducted an exploratory study on private and public health workers (which included nurses and doctors as well) for Uttar Pradesh and Andhra Pradesh. They tried to link their satisfaction level and performance with their motivation levels. The study

asserted that for ensuring quality and efficiency in health services, the motivation level of health workers is an important predictor. On the other hand, private sector being quite heterogeneous and dynamic in nature requires separate study to analyse the work related factors and supply decision of health workers.

Purohit & Bandyopadhyay (2014) in their study attempted to analyse the extrinsic and intrinsic motivational factors for 92 medical officers in three Indian states viz., Madhya Pradesh, Gujarat and Odisha. They analysed 14 motivational factors by grouping it under extrinsic and intrinsic motivations, which they further linked to health workers' performance. Nonetheless, these kind of studies are more close to psychological exploration rather than falling into strict economic or non-economic categories.

In this backdrop, it can be argued that in Indian context, so far the health services delivery is more or less analysed in terms of insufficient supply of physicians or nurses. Available literature are mostly confronted with the question of managing the supply of doctors to the estimated need of the population. In a particular geographical area, (most likely in a rural or urban setting) the lack of research is noted which could explain and elaborate upon the nuances of those factors which can shape their job choices. Available literature on international migration of physician observes it as a significant variable for influencing the available stock of physicians in India. But because of data constraint, none of the studies have tried to incorporate it as significant variable while estimating the model for physicians' demand and supply especially in Indian context. So far the epochs of theoretical and empirical developments over the high skill brain drain versus brain gain issue have analysed it in terms of push and pull factors. Higher wages, personal and professional aspirations have been considered as major pull factors for Indian physicians. But again many of the contextual, organisational and personal factors have not been analysed in detail to see the simultaneity of pecuniary and non-pecuniary aspects of physicians' job choices. The political economy of international migration has not received much attention so far, which has now emerged as prominent factor in the whole dynamics of migration (Walton-Roberts, 2015). Migration of physicians from India shows the global nature of heath care education. It has been argued that Indian physicians and nurses are produced to cater the demand of international market apart from the domestic demand (Khadria 2007; Roberts-Walton 2015).

It also indicates towards a global trend of shifting health education in the framework of marketisation, thereby making health training a pure private good. Pouring of corporate and other private entities into the realm of health education training in many of the Asian countries including India, has commoditised the medical education. This has direct linkage

with the performance and job choices of physicians while selecting a particular geographical (rural or urban) location or a particular sector (public or private). It establishes the chord between tendencies of global health worker migration and the investment made in medical education in various source countries including India.

This study does not seek to model all the pecuniary and non-pecuniary determinants of international migration of physicians from India, but to study the characteristics of migration of physicians with its general trend and pattern. The study will further try to forge a link between their migration and their supply at home country.

Apart from this, the prime objective of this study is to explore the labour market of physicians who are employed in public sector and involved themselves in either rural or urban area. This originates from the exploration (as discussed in this section and also in detail in next chapter of review of literature) that lacunae exist in studies especially for physicians' market in Indian context. In this backdrop, the following objectives and research questions are framed.

1.3 Objectives and Research Questions

Following the above discussion and subsequent backdrop, this study aims to inquire into following objectives-

- To explore and analyse the Indian Medical Education System in India in general and Uttar Pradesh in particular.

Specific Research Questions to this objective will be-

- What are the major characteristics of Indian Medical Education System of India related to production of Indian Medical Graduates?
- What are the major trends and patterns of distribution of Medical Colleges and production of physicians across Uttar Pradesh?
- If differences are observed then what are the possible explanations in theory of labour market? If not explained, then what are the possible reasons for that?

- To study the characteristics of labour market of physicians in general and within the context of Indian submarket of Uttar Pradesh in particular.

Research Question to this objective will be-

- What are the general characteristics which prevail in labour market of physicians in rural and urban setting in India and in specific case of Uttar Pradesh?

- What are the pecuniary and non-pecuniary variables effecting their distribution in a particular setting?
- How non-pecuniary variables are figuring into conventional labour market supply decisions of physicians along with pecuniary ones?
- How the labour market dynamics in terms of supply of physicians does get effected by the pecuniary and non-pecuniary factors?
- How to explain the theoretical underpinnings of labour market of physicians in general and in Indian context?
- How specific and different is the market for physicians in India from the so far studied labour supply models?

➢ To study the characteristics of International Migration of Physicians from India as a factor in their aggregate supply pattern

Specific Research Questions to this objective will be-

- What are the general trend and pattern of migration of physicians from India to abroad?
- What are those possible leakages from the labour market specifically in the form of international migration, thereby affecting the supply side dynamics of their labour market?

1.4 Overview of Related Theoretical Framework

Theoretically placing, the application of assumptions and principles of conventional labour market to the analysis of labour market for health personnel is quite different. (Mcpake et al. 2013; World Bank 2014). Various arguments and analyses have been put forward for this difference, which ranges from the different institutional set up to varied set of interests for the health workers. However health economics draws overlapping set of tools from microeconomic theory and other empirical methods to analyse some of the conventional labour market issues. For example, affect of changes in wages of a health worker over the supply of their working hours is analysed within the ambit of general microeconomic framework (Blundell & Macurdy, 1999). Empirical studies are conducted to analyse wage elasticities of nurses' labour supply (Antonazzo *et al*. 2003; Shields 2004). These studies have attempted to model the labour supply decision of nurses based on their estimated wage elasticities. Lu et al., (2102) in their study went for another important aspect which was related with the performance of the health worker in relation to their pay. In this regard, some of the literature is available which have tried to evaluate the pay for performance (Lu et al.,

2012). However, most of these studies have been specific to the United States or Europe. Of late, some of the studies have used discrete choice experiment (DCEs) in some African countries to examine the preferences and choices of health workers in a predetermined setup (Kruk et al., 2010).

Principal agent theory is oftenly talked about in theoretical literature when physician is placed as an agency in this framework. This aspect has further led to the emergence of physician induced demand hypotheses (PID) to explain the behaviour of physician. This hypothesis sets itself on the assumption that health care market is imperfect one. This imperfection is responsible for information asymmetries between physician and the patient. Taking advantage of this information asymmetry, physicians usually set their own price in the market by influencing the demand schedule of patient, depending upon his income or ability to pay (Arrow, 1963).

However all these theoretical applications have been put under the broader regime of human capital framework, which influences the choice of entering into the medical education and then health worker's transition from education market to the labour market with the help of appropriate models and explanations (see figure 1.1). Theoretical models are also developed to analyse the issue of dual practice among physicians as of one proposed by Gonzalez and Stadler (2013).

It can be argued that demand schedule for health personnel is influenced by various aspects including organisation, agency or the sector in which he or she prefers to work, which again is a form of derived demand. Because, this is further determined by the need of population and also the expenditure on health care which may further transform this need into the effective demand. Given the other important inputs for the production and deliverance of health care such as paramedics, pharmaceuticals, equipment and other related infrastructure, organisation and deployment of labour in terms of health worker is of greater importance. Every factor or input has their market, which determines their supply, availability, productivity and distribution and so is the case with health workers. In this backdrop, the labour market approach provides a detailed theoretical set up to analyse the supply side dynamics of a health worker.

1.5 Methodology and Conceptual Framework

Research methodology envisages overall approach in analysing various aspects of a well defined research problem. It is a broader term which incorporates not only a guide to prepare a well suited research design but also several other issues like ethical concerns, research

constraints, limitations and other dilemmas which a researcher usually faces during the research. There is marked difference between research method and methodology. The difference is observed in terms of philosophical foundation. Methodology can be termed as the general philosophy through which a research is guided. It can be in the form of principles or can be situated in any broader paradigm. Methodology describes and provides a rationale for adopting various methods in conducting a research and to bring out the limitations and constraint of resources at the other hand. It helps in clarifying the assumptions of any particular theoretical framework and further bringing out the potentialities of future research as well. Furthermore, it supports new applications coming out from the validity and reliability in a particular model or technique and thus providing frontiers for new formulations. (Kaplan, 1973).

"Method" means for employing range of tools and techniques to gather and analyse the required data. This is further supplemented by the objective and research question, which a researcher seeks to answer. With the help of method, data is collected, processed and analysed to reach over inferences, explanations and further prediction. By convention, this word has originated in response to techniques of positivistic model, which has more to do with conducting experiments to explore and explain any phenomena with some predefined questions. In a general way it can be said that methodology is meant to understand the process of a particular scientific or non-scientific enquiry (Cohen, 2013) while research methods provide various tools and techniques to gather, process and analyse the data in order to reach a valid finding (Dawson, 2002; Babbie, 2013).

Method further involves designing of questionnaire (semi structured questionnaire involving binary answer questions as well as detailed answer), sample size and sampling procedure, data collection, analysis and interpretation of results. With the help of method, a researcher selects the sample given the available population. Selection of a sample depends upon the research area, research questions or hypotheses and also to the availability of getting the required data or responses from the selected sample. Depending upon the technique, generally two types of sampling are observed that is probability sampling and purposive sampling.

While conducting a probability sampling, every object or person have an equal chance to get selected for the sample from the chosen population. The objective behind choosing this kind of sampling technique is to generalise the observation for the whole population with best possible explanations. In case of purposive sampling technique, description of a chosen sample is more important rather than generalising any result. It is helpful in qualitative

research specifically for carrying out the case study design. In this case, the sample size is not pre-determined and researcher usually go by the snowball sampling technique to collect his sample, which further depends upon the availability of that characteristic sample in terms of studied variables (Dawson 2002).

Difference between quantitative and qualitative research is taken for the issue of reliability and validity, and the latter is criticised for these two points. Eventually, the rationale behind selecting a particular methodology depends upon the objective and related research question that researcher wants to bring about. In this backdrop, next section provides a general description about the used methods, and instruments of analysis for the study. The chapter will also deal with the related conceptual framework as per the proposed objectives.

1.5.1 Rationale for the Proposed Methodology

This research pertains to the case study of registered medical practitioners who have minimum qualification of MBBS and practising in the rural and urban areas for some time. The purpose of study is to study their economic and non-economic behaviour in rural and urban setting and how it is affecting their labour market dynamics, through in depth interviews. Allahabad a district situated in Uttar Pradesh, the most populous state of India, has been chosen for selecting the sample doctors from both rural and urban settings. The selected sample size is of 90 in which 80 doctors turned up for interview. 35 doctors are selected from rural area while rest 45 doctors are from urban area. The sampling procedure followed is purposive sampling, whereby doctors in areas are identified by Uttar Pradesh Health and Medical Education Department from where these doctors are employed. They are supposes to present at PHCs, CHCs and District hospitals for providing their services to the concerned population. Descriptive statistics of sample is discussed in chapter[3] five, which will provide information about the number of interviewed doctors in rural and urban area. The average population served by them and some other observed characteristics will be discussed.

There is observed difficulty in getting good sample size because of scarcity of doctors in rural areas and also the reluctance of urban doctors to provide interviews and other related information. To know more about their practicing behaviour some patients were consulted in these areas. In urban areas the public private nexus of doctors are more clear, and also their number is quite high in comparison to rural ones. The probable reason is that doctors in rural

[3]For detailed description of descriptive statistics related to sample, see the Chapter Five.

area may not be able to do private practice because of low effective demand and lower ability to pay by rural people. Also the cost of living becomes an important factor for practicing in remote areas among the others.

1.5.2 Conceptual Framework for the Study

It has been established that health worker is an important segment of the health care market. In aggregate term, health care market in itself may exhibit the characteristics of different market structure in terms of economic analysis. There may be some element of a competitive market structure or prevalence of monopolistic kind of practices within the health care sector. On the other hand, HRH which comprises of different types of health workers having different skill and efficiency levels may exhibit a different kind of market behaviour which is more closely linked to labour market framework. Labour market for health care professionals which forms the core segment of entire health care market is dependent upon two interlinked aspects. The first aspect is related to market for medical education, whereby an individual decides to join the health labour force, while the second aspect is related to those macro and micro level factors under which a health worker decides to offer his services subject to different geographical settings. Therefore, health workers' role as a central component of health care system can not be analysed in isolation and vice-versa as they act combinely within a production function framework (Mcpake et al, 2014). Mcguire (2000) analysed that most of the discussions on health care market are situated in neo-classical paradigm. In neo-classical theory, a hospital[4] or individual physician is treated as firm whereby they set their price (fees) and on quantity (provision of services) subject to the constraint of market demand of their services. But again this paradigm has been questioned because a physician's profit maximising behaviour depends upon his relational dynamics with patients. This relation may work as an advantage to the health care provider because he or she possesses superior knowledge about the treatment than the patient's itself. This may lead to the supplier induced demand in this sector. This renders difficulty in decision making to the consumer while making the choices for treatment as they do not have any proper or required information to do so. This generates the information asymmetry in the market for health care and eventually leads to market failure as discussed by Arrow (1963).

[4] The point should be noted that provision of health care services by public or private hospitals stemmed from the debate of public and private good. Health care services and education are considered either as public good or merit good depending upon the mode of their provision. Here the reference point for discussion is individual services rendered by physicians either in any hospital (government or private) where they are employed.

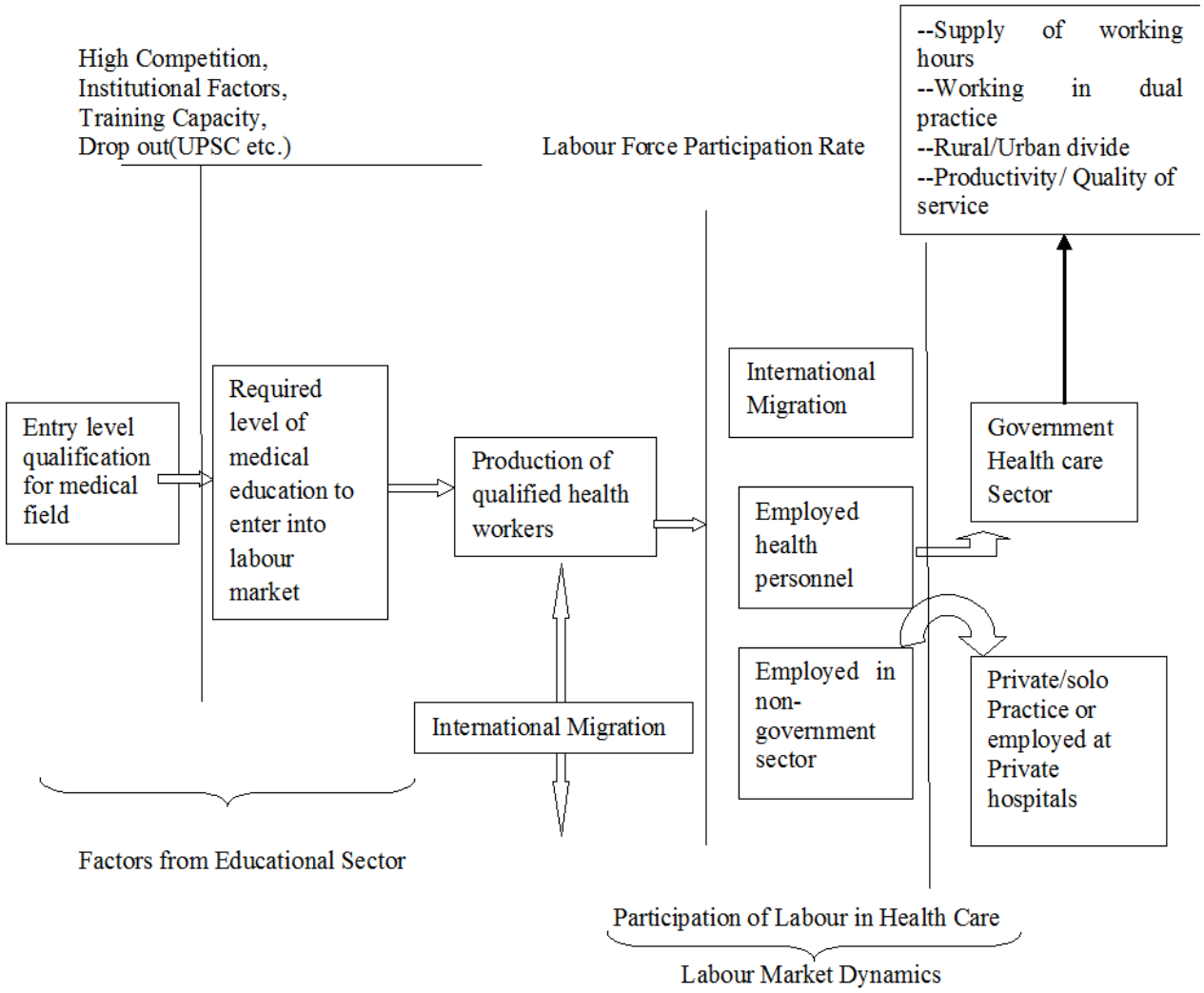
Because of these specificities, labour market for health personnel is directly connected and derives many of its assumptions from health care market (Scheffler et al., 2012). Research documents from World Bank also asserted this fact that because of the specific economic characteristics shown by health care market as a whole, the labour market of health workers can not be analysed on the very basis of market forces alone (World Bank, 1993).

The key concepts arise from the description of the WHO, whereby demand for health care and its supply are linked with the training capacity of health worker in a particular country (Scheffler et al., 2012). Further the labour market for health personnel is dynamic in nature which again depends upon outcome of medical education sector and employment of the health labour force. Training of health workers by the medical education system defines the landscape of supply of future physicians and nurses to the system as per their demand and need (Sousa et al., 2013). In Figure 1.1, inter-linkages between education sector and entry to the labour market for health care has been explained. This figure is general description of the physicians whereby they enter into their respective chosen labour markets after getting the training at medical school. Variables and other factors which are shown in this diagram is more in tandem with Indian scenario, which shows more complexity in terms of transition of health personnel from training to entering into the health labour market. There is marked difference between the labour market of physicians from the other cadre of health personnel like nurses, both in terms of entering into the medical education as well as into the labour market. In case of physicians, the factors are more complex because of the high level of competition among prospective students for getting admission into any medical college and also high cost of training. The skill gap is also very high between physicians and nurses, although in the production process of aggregate health care the appropriate combination of both the professionals is required (as inputs for producing health care). Furthermore, nursing is more or less a gendered profession across the globe, especially in India, whereby usual socio-cultural and also economic context play an important role in determining their services, which is usually not the case for physicians. This study is related to study of labour market for physicians in Indian setting, therefore further development of conceptual understanding will involve labour market factors for physicians and not for nurses.

As the Figure 1.1 explained, supply of physicians is determined through education sector and employment sector variables. Tough competition at entry level, i.e., after passing out from intermediate level and then trying to get admission in any medical college determine the choices of student to enter into this field along with several other socio-economic constraints. After getting a degree to qualify for entering into the labour market for providing their

services, there may occur some leakages in terms of their migration (internal as well as international), or to switch for other job. Their decision to participate and also to continue further in a particular sector like public or private depends upon several factors. The institutional set up of any labour market along with other its absorbing capacity also play important roles in retaining them.

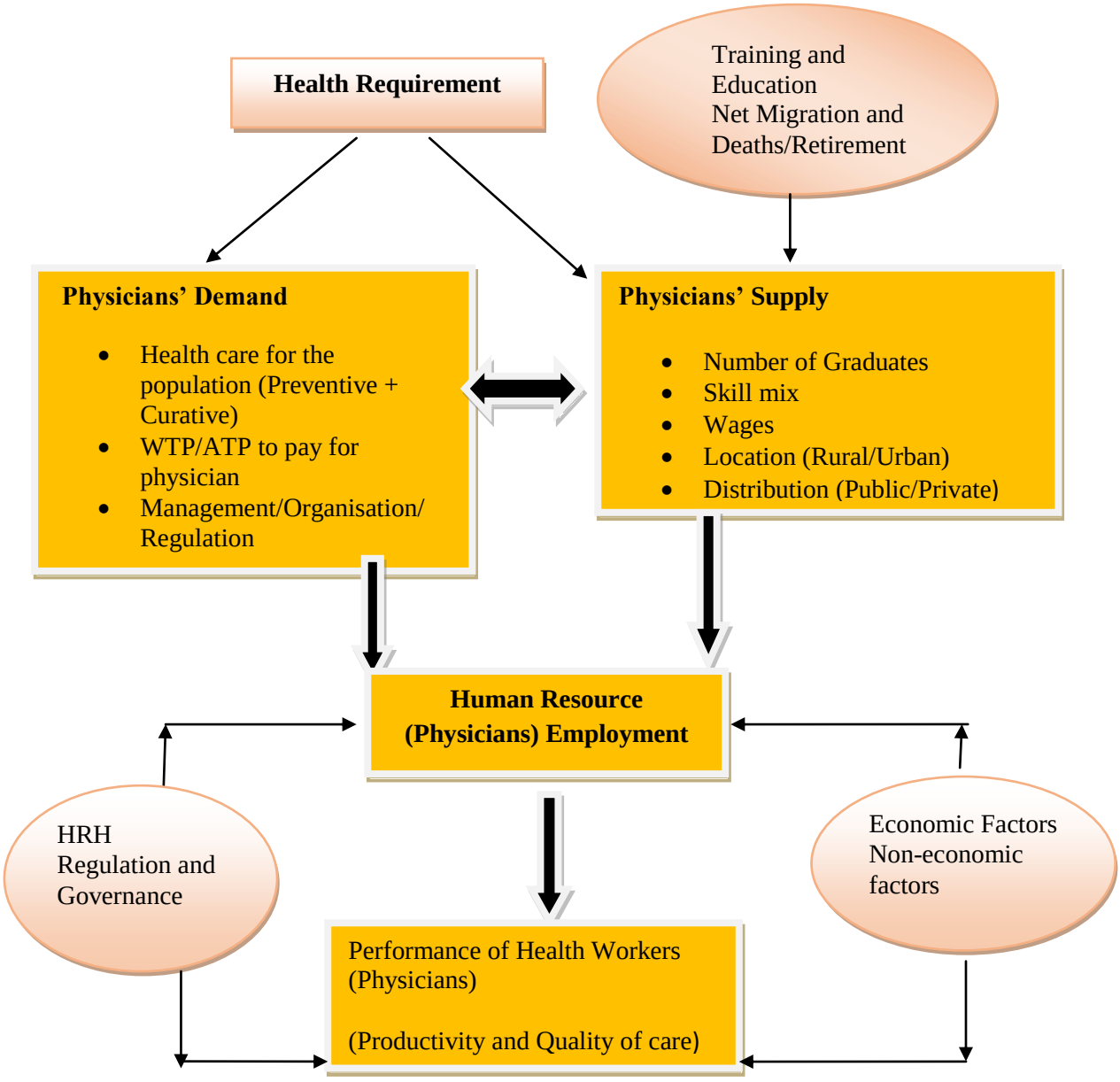
Figure 1.1 : Employment and Labour Market Dynamics for HRH



Source: Author

Figure 1.2 is derived from the figure 1.1, whereby the major components of physicians demand and their supply are depicted.

Fig 1.2: Basic Labour Market Framework of Physicians



ATP= Ability to pay
WTP= Willingness to pay
HRH= Human Resource for Health

Source: Author

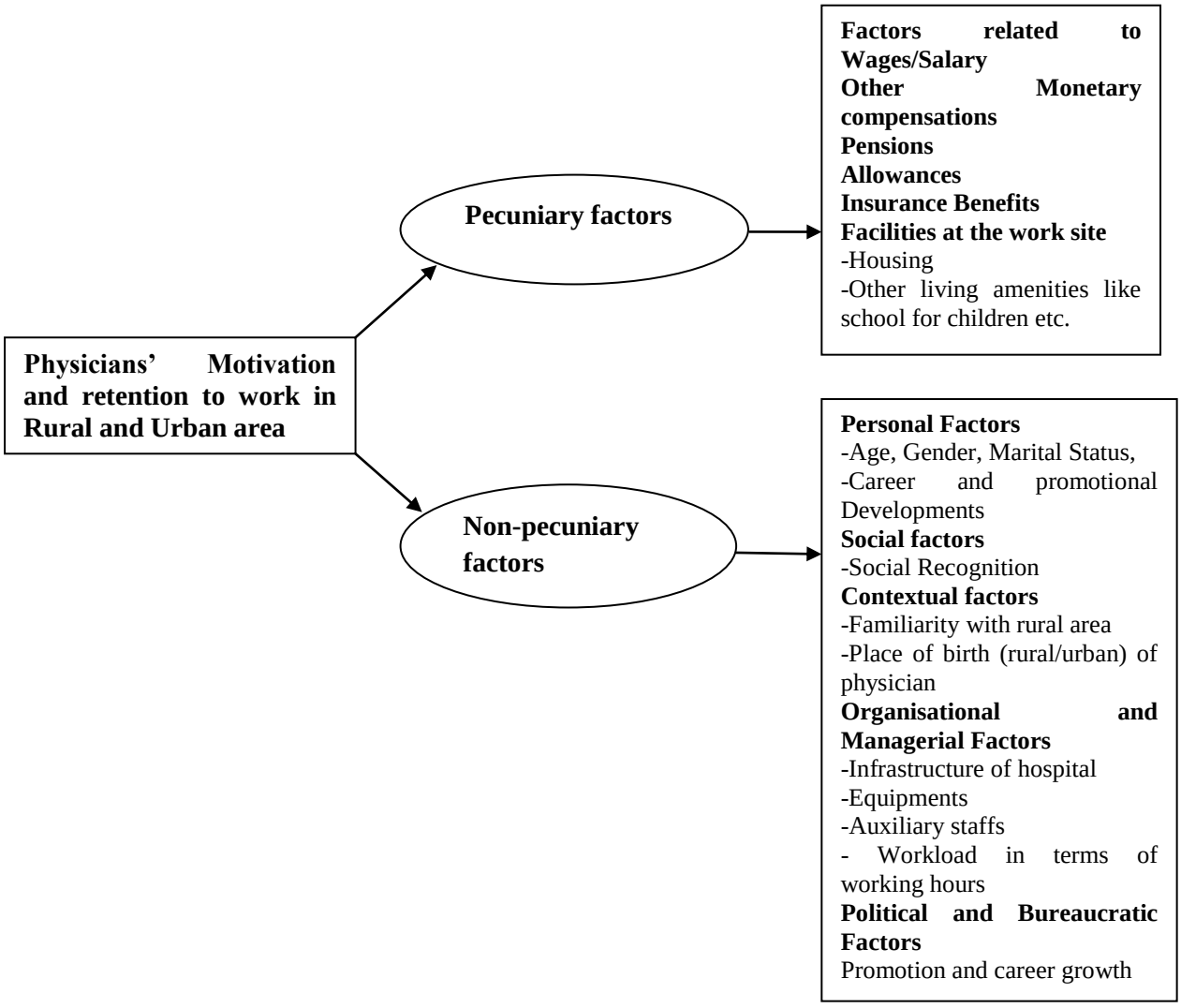
Health needs of a population depend upon supply and demand for physicians, in which supply is further determined by economic factor like wages (wages or the payment has been established in positive relation with the supply of health personnel, as per the conventional economic postulate) other incentives, further investment in specialisation in their skill, and other non-economic factors like distribution of physician in government or private sector, location of practice , motivation , incentives, and other non-economic factors.

After entering into the labour force they prefer to work in any self establishment, which is similar to private practice and may have different labour market framework. On the other hand, they may migrate to abroad for different reasons or make themselves available for public sector at the pre determined wage rate and other emoluments. This study focuses on those physicians who are employed in public hospitals or in any other government health care establishment. The study derives its concepts from the available literature where it has been argued that several factors influence the decision of a physician to work in a particular setting after entering into the public sector. Factors may range from labour force participation decision and their preference to work in a particular setting like urban, rural or semi-urban areas to the choice of institutional domain under which they want to offer their service viz., public or private or sometime under both the domains. Apart from these sectoral and institutional factors, a physician's decision to participate in labour force depends upon personal and societal factors like gender, age, marital status, family conditions and also other sources of income in the household.

In terms of motivation of physicians some of the studies have presented the theoretical and empirical evidences. For example, study conducted by Dolea & Adams (2005) explained the importance of non-financial factors for the performance of health workers. WHO (2011) in its report have stressed that internal (rural to urban) and external migration are pushed not only by differential in wage rates but other non-financial factors. As per Adams and Hicks (2001), financial incentives may include basic salary and other allowances, housing facility, health insurance premiums etc. For the sake of simplicity of analysis, these are clubbed under the single head of monetary benefits or incentives, rather than calculating the individual benefits of every factor. Non-financial incentives do not involve monetary transfer, but may include management practices, supervision, other assistance at the workplace, better career and working opportunities, further learning etc. (Adams & Hicks 2001; Stilwell 2001; Henderson & Tulloch 2008; Ramani et al. 2013; Squires et al. 2016).

The proposed study has derived its conceptual set up in the backdrop of above discussion, which is given in the figure 1.3. Differentiation and typologies of pecuniary and non-pecuniary factors are detailed as per the Indian context. World Health Report (2000) have classified these factors under the categories of internal and external incentives but mentioned the overlapping and pervasiveness of these incentives to economic factors (Garcia-Prado, 2005). The significance of various non-pecuniary factors is different for individual physician which vary as per the context and setting or geographical location of the practice, which may prove influential for behavioural heterogeneity among physicians.

Figure 1.3 Pecuniary and Non-pecuniary Factors



Source: Author

Some of the studies on labour market for health workers used modelling techniques to observe the differences in wage elasticities for male and female physicians (Kalb et al., 2015). However the utility function of a high skilled physician whose services are much in demand, the results for calculating wage elasticities might not be very sensitive. Because of a specialist's high income levels and workload in terms of working hours would not impact much upon the outcomes of increasing their wage and thus not very significant effect on their labour supply. Government employed doctors are already reporting higher workload, therefore cost of sacrificing one more hour of leisure will be higher than the marginal income earned.

1.5.3 Sampling Procedure

Sampling procedure will involve identification of sample site, number and process of collecting information through suitable questionnaire. In this study, non-probability sampling technique has been used, as per the requirement of research design. Purposive sampling is applied which is not based on the assumption of probability, therefore also termed as selective or judgemental sampling technique. Further it depends upon the selective criteria of researcher for choosing the units of sample, which may be drawn from group of people having same technical skills, organisations, or similar group of data. Size of sample varies for probability (random) and purposive sampling because latter is more suited to a case study design which does not require a large sample to generalise the findings. This technique of sampling is also suited for the study based on mixed method techniques both qualitative and quantitative and also for studying and exploring the characteristics of a particular group or cluster, which may or may not be completely homogenous (Patton, 1990). In this study, physicians of similar characteristics in terms of qualifications, work experience have to be interviewed albeit with different locational settings of urban and rural ones. In both of these settings their labour market characteristics and economic and non-economic factors need to be explored, therefore purposive sampling is undertaken for interview purpose.

1.5.4. Selection of Uttar Pradesh as First Stage Sample

Every sixth person of the world is Indian and every sixth Indian lives in Uttar Pradesh (UP). As per the Census (2011), (UP) has the largest population among all other 28 states of India. It comprises of a population of 19.98 crores as per the latest Census, while in the last Census of 2001, it was 16.62 crores. Out of the total population, around 52 % are males and 47 % are female population. Major demographic characteristics of UP is presented in table 1.1. UP is not only largest in terms of population but also known for its socio-economic diverse population distribution.

Table 1.1: Major Demographic Indicators for UP

	Rural	Urban	Total
Population (%)	77.73%	22.27%	100%
Total Population	1553,17,278	444,95,063	199812341
Male Population	809,92,995	234,87,515	104480510
Female Population	743,24,283	210,07,548	95331831
Population Growth	17.97%	28.82%	20.23%
Sex Ratio	918	894	912
Child Sex Ratio (0-6)	906	885	902
Child Population (0-6)	250,40,583	57,50,748	307,91,331
Child Percentage (0-6)	16.12%	12.92%	15%
Literates	852,84,680	291,12,875	1143,97,555
Average Literacy	65.46%	75.14%	67.68%
Male Literacy	76.33%	80.45%	77.28%
Female Literacy	48.48%	60.96%	57.18%
Life Expectancy	67	65	66
IMR	72	51	68
MMR			292
U5MR	97	63	90

Source: Census 2011

Not only in term of demographical characteristics, but in case of health related parameters, UP is among one of the states of India which shows the poorest status of health indicators while discussing about its health outcomes and in provisioning of health care services. It features at the lowest rung of all three major indicators of health *viz.*, maternal mortality ratio (MMR), infant mortality rate (IMR) and nutritional status. The IMR of UP shows a very sorry figure. With an IMR of 73 per 1,000 births, as per the data of NFHS-III, Uttar Pradesh is worse off than the average level and it is far away from achieving the Millennium Development Goal of an IMR of 30 which was to be achieved in 2015. The IMR data from NFSH-3 show that UP was at the lowest end (table 1.2) and it consistently maintained the same position till the latest estimates of 2011.

Table: 1.2 IMR across Some States and UP

State	Rural	Urban	Total
Uttar Pradesh	75	64	73
Bihar	63	54	62
Tamilnadu	37	23	31
Kerala	14	18	15
All India	62	42	57

Source: NFHS-III

Overall mortality in the state has been higher in UP than the country as a whole and this trend continues to the present. It has been found in the available data of SRS (1971) that crude death rate (CDR) of UP has been higher than the national CDR and it continued till 1991. During 1971, CDR for whole India was 14.9/ 1000 of population, while for UP it was 20.1/1000 of population. During 1981, CDR for India was 12.5/1000, while for UP it was 16.3/1000. In 1991, this gap persisted with UP having 11.3 and India having 9.8/1000. This substantiates the observation that UP has least benefited from substantial improvements in health outcomes in the[5] rest of the country during the last half-century (Ramana *et al*, 2002).

Apart from IMR and CDR, another frequently used health outcome indicator is i.e., maternal mortality ratio (MMR) which is at the crossroads (one of the highest) in UP if compared to other states in India. Maternal mortality as an indicator of health status reflects various other interrelated factors which hamper the realisation of the targets of UHC. Higher MMR indicates that medical condition of mother and child are not dealt with proper health care in addition with attendance by any skilled health personnel. During 1997, MMR count was observed at 707/100,000 live births for UP, which was eight times higher than the Kerala's and even higher than the all India level of 436 in that year (SRS, 1998). Medical sociologists observe this in terms of the various socio-economic factors which may enable or disable a woman to take up the health care services. In 1997, there were an estimated 707 maternal deaths per 1, 00,000 live births in U.P. This was almost eight times higher than

[5] There is difference between 'Maternal Mortality Ratio' and 'Maternal Mortality Rate' although many sources use them interchangeably to express the maternal health conditions. WHO differentiates between these two terms. Maternal Mortality Ratio is number of maternal deaths per 100,000 live births, once a woman is pregnant and measures the risk. Thus, it depicts the risk of maternal death relative to the frequency of childbearing. On the other hand, the Maternal Mortality Rate is the number of maternal deaths in a given period per 100,000 women of reproductive age during the same period. It reflects not only the risk of maternal death per pregnancy or per birth, but also the level of fertility in a population (WHO 2009 ; Wilmoth 2009).

Kerala and 70 percent higher than the national average of 436 (SRS, 1998). The table 1.3 shows that UP's position for the MMR which is the highest among all other states, even below than Odisha, Bihar and Madhya Pradesh, which are considered more backward than UP in terms of other socio-economic indicators. This consistency in high MMR shows that the state's poor performance in the utilization of health services by women as well as other associated socio-economic factors.

Table: 1.3: Maternal Mortality Ratio in India

India & Major States	2001-03	2004-05	2012-13
Kerala	110	95	66
Maharashtra	149	130	87
Tamil Nadu	134	111	90
Andhra Pradesh	195	154	110
West Bengal	194	141	117
Gujarat	172	160	122
Karnataka	228	213	144
Haryana	162	186	146
Punjab	178	192	155
Bihar/Jharkhand	371	312	219
Madhya Pradesh/ Chhattisgarh	379	335	230
Orissa	358	303	235
Rajasthan	445	388	255
Uttar Pradesh	517	440	292
India (Total)	301	254	178

Source: SRS, 2014

Life expectancy at birth, which is considered as another popular measure for the health outcome of the entire population, shows the number of years a person born in a region is expected to live. The lower the life expectancy, higher will be the mortality and morbidity burden. Like many other indicators of health, UP's rank in the life expectancy ranking is the lowest at 66 years as evident from Table 1.1.

As for as, the morbidity profile of the state is concerned, the state again outnumbers other states in terms of the proportion of deaths due to five 'big killer' (Pneumonia, Tuberculosis, Diarrhoea, Measles and Malaria) disease per 100000 of population. The WHO considers these diseases as accounting for major killer of children and adolescent population

(WHO, 1999). These are nonetheless preventable diseases, which require proper addressal by health workers.

According to the NFHS III the health profile of Uttar Pradesh shows that the Total Fertility Rate (TFR) is at 3.8, about 47.3% children below the age of 3 years are underweight. Besides, 85.1% children between the age group of 6 to 35 months are anaemic and about 34.1% married women have BMI (Body Mass Index) below normal[6]. As per the National Sample Survey (NSSO) conducted during 2014, it has been noted that UP is one amongst those states with the highest cost of hospitalization in rural India. Average expenditure for hospitalisation is around Rs. 18,700, on the other hand merely 30.2 % of population goes for the utilisation of public hospitals and 69.8% of population go for private hospitals. This is one of the reasons for incurring high out of pocket expenditure on health care by most of the population (NSSO, 2015).

As far as the provision of health services is concerned, it maintains the same position as it has on the health status front. For example, the percentage of children fully immunized is lowest in UP. It is the state where maximum numbers of unassisted births take place. Thus, its poor performance in terms of the health outcomes and provisioning makes it a special case for study.

Apart from the poor demographic and health status indicators, Uttar Pradesh has a huge shortfall of human resource in its health infrastructure.[7] The state has 2209 doctors as against to 3497, currently 20521 healthcare professionals are available in Sub Centres as against 31200 which are actually needed. This human resource or talent gap can also be seen in CHC's where the number of healthcare professionals is about 773 as against the total requirement of 1298 and that in PHC's is 3497 as against the actual requirement of 5194. The state has only 484 specialist (Surgeons, OB&GY, Physicians & Paediatricians) holding position as against 3092. Moreover, the quality of healthcare from these hospitals and health centres is a big question mark. This is mainly because of the lack of trained and qualified hospital and health managers.

[6] It's considered 24.5 as per the standard norms of WHO for the women aged in group of 20-29.
[7] For detailed analysis, see Chapter Six.

1.5.4.1 Public-Private Nexus in Uptake of Health Services

As far as health infrastructure is considered, the proportion of public-private beds in UP is 73:27 (Table: 1.4) but there is a strange dichotomy present in the state, given the availability of the public infrastructure the private sector is the major source of treatment.

Table 1.4: Inequities in Availability and Accessibility of Health Services for Some Select States and UP

	Tamil Nadu	Kerala	UP	Bihar	All India
Population covered by a sub-centre	4022	4628	6416	8342	5111
	(80)	(100)	(139)	(180)	(110)
Population Covered by a Primary Health Centre	24462	29570	45095	45094	33191
	(83)	(100)	(153)	(152)	(112)
% of Villages having access to a PHC within 5 km	58	94	48	49	44
	(62)	(100)	(51)	(52)	(47)
PHCs with at least 60% of Inputs: *Infrastructure*	42.9	64.7	17.2	8.9	31.8
	(66	(100)	(27)	(14)	(49
Staff	91.4	96.8	52.8	19.6	48.2
	(94)	(100)	(55)	(20)	(50)
Supply	55.7	77.8	19.5	11.4	39.9
	(72)	(100)	(25)	(15)	(51)
Equipment	34.3	92.2	28.6	6.2	41.3
	(37)	(100)	(31)	(7)	(45)
Training	18.6	27.7	12.4	15.5	19.9
	(67)	(100)	(45)	(56)	(72)
Population served per government Hospital	15391	177614	601241	869406	156556
	(870)	(100)	(339)	(489)	(88)
Population per government hospital bed	1498	1299	20041	28980	2336
	(115)	(100)	(154)	(223)	(180)
Ratio of private and public beds	78:23	32:69	73:27	71:29	57:43

Source: NRHM(2011)

Moreover, the per capita income of UP, barring Bihar, is the lowest in the country yet the use of the private source for the treatment is the highest in this state. Excluding Bihar, UP is the state where, in the rural area, the use of private non-institutional (OPD services) and

hospitalisation (indoor services) are highest. The non-availability may be the one of the reasons for this high uptake of private services. Whereas, for the urban area we see the same pattern *i.e.* use of private services is again higher in comparison to other states. In terms of use of private health care services, it stands along the side of Gujarat, Punjab, and Maharashtra etc. The higher use of private care in these states are justifiable as these states belong to the higher income state yet higher use of private care in a state like UP makes it interesting case study for researchers.

1.5.4.2 Low Income High Out-of-Pocket Expenditure[8]

As pointed out earlier, in UP per capita income is low, nevertheless the uptake of private health care services are high. This higher use of private services results into an increased financial burden—in the form of high out of pocket (OOP) expenditure—on the people. Garg *et al* (2005) argued in their study that higher OOP impacts the poverty ratio in the country by increasing it. This impact is more significant in the already impoverished states, especially in rural sectors. In their study, which was based on NSSO data of seventeen major states of India, they found that there is a clear cut relation of higher OOP with per capita state domestic product (PCSDP). It implies that richer states have higher OOP. But in this regard, a contrasting picture has emerged about the Uttar Pradesh. Primarily, it has been argued that poorer states (here the example is UP) have low OOP because of people in these states have lower income and so lower ability to pay for their private health expenditures. The other reasons involved are low level of awareness toward health and health care facilities, and also institutional bottlenecks on the part of government like infrastructure etc. On the other hand, the same may not be the case for richer states, because their higher OOP is out of the fact that they have better choices for health care provisions and also availability of better or higher quality of private care. In addition, the higher income allows them to go for quality health care and increases their ability to pay. UP have poor infrastructure along with low utilisation of public health facilities (among which the non-availability of physicians at PHCs is one of the most prominent ones), which further draw its people towards the private facilities or doctors. Both the urban and rural areas experience this aspect, which leads to

[8]Out of Pocket Expenditure (OOP) constitute the largest segment of private expenditure on health by all accounts and across the countries. In health accounting, OOP is direct spending by the household which does not include third party payments like insurance. Estimation procedure of OOP varies as per the different data sets and methodologies, adopted by different governments. India uses NSSO data for estimating OOP out of the private consumption expenditure on health like hospitalisation, medicines, other costs of treatment etc. As per the World Bank latest data on OOP for 2014, OOP constitute for 89.2% of total private expenditure on health in India. In 2009, it was 87.8% (WB, 2014).

higher OOP in UP despite of the categorisation of it as a poor state. The gravity of the poverty can be seen by the findings of 52nd and 60th round of NSS which observed that 234 and 283 person round per 1000 of spells of ailment during last 15 days were reported untreated, respectively, due to financial reason. It shows that percentage of the untreated ailment due to the financial reason increased in the period. And at the same time when a considerable proportion of the population avoiding treatment due to the inability to pay, the increasing trend for the use of private care has been observed. This reinforces the fact that financial burden due to treatment of ailment has been increasing as also confirmed by the report of &71st round of NSSO survey.

1.5.5 Allahabad as District Unit Sample

Within state, a huge rural-urban disparity in health is also found which is manifested in different health outcomes such as IMR, MMR, and Neonatal mortality and morbidity rates. For example, the SRS (2011) shows the wide disparity in IMR between rural and urban area. The IMR in rural area is 77 whereas in urban area, it is 54. As for as provision of health care services is concerned, data from UPHDR (2007) reveals that less than three percent of women have access of full ante natal care in 27 districts out of total 75 districts in UP. In 32 districts this level remained in between 3-7 percent. Capital Lucknow and the Ghaziabad were the two most developed districts of UP, which got more than 10 % of their women to receive ante natal support (UPHDR, 2007)[9].

The districts in Uttar Pradesh are marked with wide disparity in health. Some districts are better off in terms of availability of health infrastructure as well as socio-economic development, for example, Ghaziabad, Lucknow and Kanpur Nagar including most of the districts of western part has recorded better position in overall health outcomes and health care access (UPHDR, 2007). But the districts situated in Eastern, *Terai/Doab/Awadh* and Bundelkhand regions have poor rankings in the overall health indicators. This regional disparity is widely reflected in many of the southern and eastern districts of UP, including their rural and urban pockets. This may be due to incessant public neglect of entitlements to health resources and health services including availability of the infrastructure and HRH.

As the further sample, Allahabad has been selected which is geographically situated in South-east part of the State. This region is identified with lower number of medical

[9] For detailed analysis, see Chapter Six.

colleges and hospital as compared to western and central part of the state, where most of the government as well as private colleges are situated.[10] This district have largest number of children and female population, and it is a well-established fact that most of the health indicators are composed of by taking female and child health into the consideration (for example, IMR, MMR, U5MR, immunisation, attendance of birth by skilled health professionals). Therefore, Allahabad can better represent the need of medical professionals like doctors to cater the need of its population.[11]

The two blocks Bahria and Koraon are selected for rural sample under which villages were selected for interviewing the doctor, was based on distance parameter from the main city of Allahabad. Other parameters included basic amenities like connectivity, occupation of the people etc. Another sample was taken from Allahabad city as considered for urban setting. As per the Census (2011), 24.74 percent lives in urban regions of district, while more than 75 percent of population resides in rural areas. Sex ratio in Urban areas is 862/1000 population which is considerably low compared to National average of 943/1000 population, while the Uttar Pradesh' aggregate sex ratio is 912/1000 population.[12]

1.5.6 Interview

The sample has been divided for two setting one is urban and other is rural.[13]A total of 80 doctors were interviewed, through the semi structured questionnaire. Sample consisted of only qualified and registered physicians with minimum qualification of MBBS degree and doing practices in rural or urban settings. The detailed analysis have of sample is presented in chapter six. The detailed questionnaire is provided in Annexure.

Selection of Respondents

Selection for the interview involved some essential and basic criteria which were -

(a) Respondent should be employed in PHC or CHC for at least more than one year.

[10] For this aspect see Chapter Five

[11] For detailed description of Sample Characteristics see Chapter Six

[12]For detailed description of sample, refer to the Chapter Six

[13] Demarcation of rural and urban areas is based on data as presented by Census tables for these two areas. Census has used two different units for this classification, that is, 'village' for representing the rural areas and 'town' for the urban areas. Census (2011) has adopted the definition of urban area as- (i) All those statutory places having a notified town area committee, cantonment board, corporation or with municipality, (ii) A place which fulfils these three criteria simultaneously-

(a) Area covers a minimum population of 5000

(b) At least 75 % of working population are engaged in non-agricultural activities and,

(c) Density of population in that area should be around 400/$km^{2.}$ Those areas which are not classified as urban, will be considered as rural.

(b) They should be serving in remote[14], rural or urban area[15]

While deciding upon the criteria for choosing the respondents, preferences were given to those who have more experience in serving either in rural or urban areas. Also, a conscious preference is maintained for more qualified doctors in terms of higher specialisation. Genders being an important factor in medical profession, as mentioned in the literature, so female doctors were also included in the sample so that richer set of experiences can be shared. Information about doctors has been collected from government registers and CMO office of the district. On the basis of abovementioned criteria, a total of 90 participants were identified for interview although only 80 turned up for giving responses.

1.5.7 Development of Questionnaire

Before developing the questionnaire, a general survey is done at the field to identify the settings. The purpose of the survey was to observe the availability of physicians at rural health centres and in urban areas as well. After identifying the blocks and PHCs, CHCs for the purpose and usual practice and feasibility of finding the physicians, a pilot level interview is conducted with five doctors from the field as a general rule to pretest the questionnaire. Based on objectives, important variables were listed and according to that the responses were observed. Finally questions were remoulded on the basis of pilot survey and final questionnaire was administered into the field.

The final questionnaire included the questions for demographic and social profile of respondents, questions related to choice and preparation for entering into the medicine as a career. In the second part, questions were related after the participation in labour market as an employed physicians while government being the sole agency for providing employment. The factors were listed in terms of economic and non-economic, which can have an influence over their functioning and job-satisfaction in their labour market. The questionnaire used, is semi-structured and have both open and closed ended questions for getting the desired response. The same format is used both for the urban and rural physicians as the employing agency is same.

[14] Government of India has assigned the criteria for determining the remoteness while classifying the PHCs and CHCs. The conditions for determining the remoteness include habitation, connectivity by road, distance from district headquarters or any forested area.

[15] For detailed description and discussion over the criteria for rural and urban settlements, refer to the Chapter Seven at page no. 211.

1.5.8 Data and Method for Analysis

Primary Data: For the analysis, primary data is collected through in-depth interviews of selected doctors having a minimum MBBS degree and have been practicing in rural and urban areas. Description of the sample and rationale for selection has been already discussed in previous sections. The data from these interviews and discussions are analysed on the basis of case study method. The data were sorted as per the categories of pecuniary and non-pecuniary factors representing physicians' wage structure, other economic benefits, reasons for staying on, and their expressed needs, and other factors which are to be categorised as per the conceptual framework of the study. Apart from this, some random interviews are conducted with students enrolled in coaching institutions in UP for getting admission in government owned medical institutions, for a general observation of medical education market across the UP.

Method for Analysis: To bring out the characteristics of labour market of physicians in general and within the context of Indian submarket of Uttar Pradesh in particular, the labour market dynamics of physicians in terms of their rural-urban distribution has to be brought out followed by sorting of pecuniary and non-pecuniary variables which eventually effect their distribution in rural-urban settings. Variables are drawn from the in-depth interviews of physicians and analysed by using descriptive statistics in terms of frequency table, cross tabulation, means and standard deviation. Some of the variables which have a probable positive association between them, are shown with the help of chi-square statistic.

Secondary Data:

Other important observations are drawn with the help of secondary data availed from different sources.

To explore and analyse the Indian Medical Education System in India in general and in specific case of Uttar Pradesh, following data sources and methods are used.

Sources of data are: Different years of data by Medical Council of India, Uttar Pradesh Medical Council, data collected from office of Chief Medical Officer, data from medical colleges of UP, Directorate of Medical Education Department, UP, compilation from the prospectus of UPCPMT, Department of Health, Government of UP, Ministry of Human Resource Development (MHRD) and All India Survey on Higher Education (AISHE). Some independent reviews were conducted with students preparing for medical entrance examination in UP to collect data and information about private coaching institutes in UP.

Method for Analysis

To be able to explore the abovementioned objective and to point out the major characteristics of Medical Education System across the India and State of UP, descriptive statistics in terms of chart, flow chart, histograms are used and compound annual growth rate (CAGR) is calculated. Respective means and standard deviations are calculated to see the variations in fee structure of medical institutions and different coaching institution.

To explore the general trend and pattern of international migration of physicians from India because of its perceived importance in leakage from the supply chain of physicians, the following sources of data are used-

Secondary Data Source: OECD statistics of different years compiled from annual reports, General Medical Council of UK for different years, Medical Council of India, World Bank's database of World Development Indicators, World Health Organisation, National Family Health Survey-III and IV, Sample Registration System of India (data for different years).

To get the data for status of Indian Health care in terms of various economic and demographic indicators like out of pocket expenditure per capita, health expenditure as percentage of GDP, MMR, U5MR, IMR, Life expectancy and utilisation of health services at different levels and also for the sector wise (public and private) and on rural-urban basis, SRS, Census stat, NSSO, NIPFP, Annual reports of Ministry of Health and Family Welfare, NRHM, UPHDR, Health Department (Gov. of UP), NCMH, Population Data from IIPS, etc. have been used.

The study being exploratory in nature uses the qualitative techniques because of small sample size. The study may not provide a generalisation of physicians' labour market as it has drawn the sample from only government employed physicians practising in a public hospital or health centre. Lower concentration of physicians at health centres and also the issue of their day to day availability have posed the limitation in collection of rich data set through interview.

1.6 Approach and Rationale of the Study

The approach of this study is based on the premise that health labour market has much to contribute in the analysis of human resource for health and their distribution across the various regions and strata. It is important to understand even at the policy level, as apart from the widely discussed demand and supply modules, how other factors interact to influence health worker's labour market. Furthermore, an individual health worker's preferences and

utility function interact with the existing wage rate within the labour market and how it impacts upon the availability of important HRH like physicians. The application of labour economics provides a basic framework to understand and analyse dynamics of health personnel's labour markets. Within this framework, demand function includes wage or pay of the worker and the source of getting income or earning (by government practice or by private), their level of speciality or experience in the field. Supply side variables include training capacity of the existing institutions, decision to participate in the workforce, retention, international migration and internal movement from rural to urban sector, geographical distribution, productivity and performance and their motivation to work. In terms of supply side economics, to counter the demand of physicians or other HRH, various researches and policy suggestions came up to augment their supply by increasing the number of training institutions and their uptake potential or by increasing the pay scale. Although this seems to be potential solution to cater the health need of the population, but through the lens of labour economics this may provide a short term solution to the problem. This further inhibits the exploration of the inter-linkage between labour economics and health economics for their potential contribution in comprehending the market of health worker for the long term perspective. Modelling into the line of economic approach while taking into other non-economic aspects in health worker's utility function, allow us to understand various issues of health worker's labour market.

It has to be mentioned that neoclassical paradigm which sets the assumption of fully competitive labour market may not necessarily applicable to the labour market for physicians *in toto.* Therefore, this study is not based on neoclassical theory of labour market solely, though many of the assumptions have been taken into considerations. The general utility function of a physician may act as starting point to enter into the preliminary analyses of their decision to participate. The divergence from the general utility theory and wage market is observed when non-pecuniary aspects are taken into the considerations. The study derives its rationale from the fact that with the help of health economics and theory of labour market, physicians' participation can be explained. In case of developing countries like India, decision and motivation to participate in a particular setting like rural and urban areas require the insights from the theories of labour market and health economics. While exploring the physicians' labour market in Indian case, the conceptual framework has been drawn from health economics and tools of analysis are drawn from the assumptions of labour economics. Some of the recent publications from WHO and World Bank have provided a detailed insight of application of labour economics for analysing the labour market of health workers

(Mcpake et al, 2014; Scheffler et al. 2012). However, it is argued that labour market for health worker, especially for physicians, is not similar to any other form of labour. The similarity is observed in terms of tools, methods and preliminary assumptions, which can provide the basic foundation for the study. In terms of methods, application of descriptive and causal analyses can be applied to the health labour market, depending upon the context, research objective and availability of data. Causal analysis of labour market of health workers has encountered several limitations in terms of data and also difficulty in designing the appropriate experimental design. Causal analysis is conducted to examine and observe behaviour of health worker in terms of various socio-economic factors. Furthermore, effect of those changes can also be analysed with the help of experimental design which may be due to any policy interventions. Through descriptive analysis, newer and modified set of research questions or hypotheses can be generated which may be useful for studying the behaviour of health worker in any particular setting with the case study approach. Nonetheless, the requirement of panel or longitudinal data for the earnings of health workers is required to bring the element of generalisation to the analysis. It has to be mentioned that use of panel data is aptly required for assessing the effect of wage or earning potential over the behaviour of health worker or with their performance. Therefore, it can be argued that feasibility of getting required data is one of the reasons for observing the limited number of studies pertaining to labour market of physicians in particular. At the same time it also does not imply that descriptive analysis in terms of case study design is not applicable for the physicians. In fact, with the help of case study approach, many of the characteristics and economic and non-economic factors can be drawn out for further evaluation and to build up a robust research model.

The rationale of the study is derived from the existing literature on health across the Indian sub-continent and also from the other studies related to labour market for health, especially in case of physicians. In case of India, and also in case of state like Uttar Pradesh, studies on physicians' labour market are limited to their supply and demand and their skewed distribution across the rural and urban area. Further, it needs to be explored and explained about the effect of various incentives over the decisions of physician to work in any particular setting. Most of the researches have cited limitations in terms of availability of data both for the descriptive analysis as well as for the casual analysis of high skilled physicians. Therefore this study is an attempt to explore the characteristics of physicians' labour market in case of rural and urban settings because of the different characteristics prevailing in these two settings.

1.7 Chapter Plan

The whole study is presented through seven chapters, in all.

First chapter provides the introduction and overview of the proposed study. In this introductory chapter objectives and research questions are presented through the streamlined review of literature, whereby the statement of problem is presented. While elucidating the statement of problem, related objectives and research questions of the study, this chapter discusses about the proposed conceptual framework with a brief introduction of related theoretical framework. Summarising upon the conceptual framework of the study, a detailed description of proposed methodology including sources of data and methods of analysis are presented. While discussing about the rationale and philosophy behind the selected research methodology, approach and overall significance of the study are also discussed in the succeeding sections.

Second Chapter is related with review of secondary literature, which highlights the major studies conducted on Indian Health care market in general and market for physicians in particular. The chapter brings out the major gaps in the labour market developments for physicians in Indian case. While discussing the literature on physicians' labour market in general, the chapter further boils down to the specific case of Indian labour market for physicians through which it identifies the lacunae in this area, which is more or less a domain of health economics.

Third Chapter is in line with one of the objectives of the study, which is to find and build upon the theoretical understanding of the labour market for physicians. It will explore the human capital theory and its inter-linkages with general labour market, while pointing out the major anomalies and critical standpoints of human capital theory in existing literature. Eventually, the chapter will focus upon the specificities of labour market for physicians, which is a case of high skilled labour. It will analyse the peculiarities and problems in terms of theoretical analysis of labour market for physician in India.

Fourth Chapter provides the description of Indian Medical Education system in terms of supply and demand of doctors across the India and in specific context of Uttar Pradesh. It will explore the scenario of Medical Education in Uttar Pradesh and supply of doctors. The chapter will also discuss about the economic and non-economic rationale while making choices in medical education, based on observations from the field of survey.

Fifth Chapter deals with description and analysis of primary data. The chapter will highlight about the demand and shortages in physicians' supply in Uttar Pradesh and in

sample site, i,e., Allahabad, while analysing their distribution. Then through the case study approach it will analyse the interviews of doctors from the rural and urban areas of Allahabad to understand the economic and non-economic factors for their working in any particular area. The study will use the narratives of doctors and other related officials collected from the sample site.

Sixth Chapter explores the International Migration of physicians in terms of one of the significant factors in maintaining their existing stock in a country like India, which have been experiencing the outflow of its health personnel to abroad. The chapter will glance upon the major epochs of theoretical arguments while analysing the causes and concerns of physicians' migration from developing country like India. It will look into the characteristics and pattern of their migration from India with the help of available data from different sources.

Seventh Chapter will present the general and specific findings of the study along with major policy implications. The chapter will also highlight the limitations of the study with further possible area of research.

Chapter Two:
Review of Literature

Chapter Two: Review of Literature

2.1 Introduction

Health and Education constitute an intrinsic part of overall socio-economic development of a nation apart from the per capita income. The effective health care services can be essential in maintaining the inclusive development of a country. Most of the countries declare in their development agenda that equitable and quality health services to citizenry would be their priority for ensuring the quality of their human capital. The importance of the universal and equitable health care was not only felt and recommended by HLEG[1] in 2010, it was recommended way back in 1946 by the Bhore Committee. It had underlined the construction of the national health plan by asserting the fact that a nation's wealth, achievement and other productive advancement are deeply impacted by the state of well-being in terms of health (GoI, 1946). Health has direct relation with the productive capacity of labour force, hence in this direction, the literature in health economics is rich with the theoretical and empirical analyses. Other disciplines like Sociology of health have also analysed labour in connection of their health in the society in terms of societal factors.

Leaving aside the other disciplines for discussing the importance of health, Economics has always been concerned about the productivity of labour force in terms of human capital that it possesses. During 90's, when endogenous growth theory pointed towards the role of human capital, most of the scholars recognised its role as an indispensible factor for economic growth. It was assumed that different levels of human capitals have different levels of productivity and therefore al low level of human capital can pose a barrier to economic development. This can further impede the competitiveness and technological improvements of the concerned economy. But, initial phase of the discussion on human capital and its productivity was mainly linked to the educational attainment of individual (or

[1]In 2010, a high level committee was constituted under the Planning Commission of India with the agenda of devising a framework for the easy provision of equitable and affordable health services to the population. This high level expert group (HLEG) has also modified the concept of UHC "Ensuring equitable access for all Indian citizens, resident in any part of the country, regardless of income level, social status, gender, caste, or religion, to affordable, accountable, appropriate health services of assured quality (promotive, preventive, curative, and rehabilitative) as well as public health services addressing the wider determinants of health delivered to individuals and populations, with the government being the guarantor and enabler"(HLEG, 2011).

level of education), and related factors like technical advancement, specialisation, research and development and eventually innovation. Later on, many researchers and scholars have brought out the importance of health in the growth process of a country under the broader ambit of economic development. Since then, various advancement in the theory of human capital, itself has incorporated this aspect of economic development. To name some of them, Mankiw et al. (1992) pointed out that health and nutrition are among the confounding factors to the growth apart from the widely discussed factor of education. Empirically, Barro and Sala-i-Martin (2004) analysed a more systematic relationship between health and economic growth while forging a link between health and wealth. From these studies, it has been pointed out that for a sustainable growth, level of human capital is an important factor. Increment in this stock of human capital, is dependent upon better education and well-being in terms of physical health combined with learning and training activities. The central argument which explains this link of health to economic growth, states that better health enhances the level of human capital, which positively affects the level of schooling and subsequent educational attainment, which eventually increases the productivity of labour. Even after entering into the labour market, an individual enjoys more productive capacity because of better health which reduces incapacity and minimises the leave because of ill health. This affects an individual's income level, therefore an important factor for overall economic growth of a country. The opposite can be said that a labour force devoid of required level of education, skills and health will be incapable of contributing to the sustained growth either for himself or for the economy as a whole. This kind of inter-relationship can be well observed in case of LDCs and developing countries, where most of the policy discussions have pointed to invest in health so that higher level of labour productivity can be achieved. Sala-i-Martin (2005) in his study explained the trap of health and poverty in LDCs and other poor economies. He argued that economies of LDCs experienced this trap because of poor health of their population, which again had lesser productivity and hence the poor performance of their economy. The vicious circle of poverty has led to vicious circle of unproductive labour by impacting upon their health status. Therefore they claimed in their research that to generate economic growth, health and poverty related problems of these countries require solution. This establishes the reciprocal interdependence between economic growth and health, which is indispensible for research in economic development and health economics.

To address the issues and concerns of the health of a country's population in all respect (whether it's curable or preventable depending upon the demographic and health profile of a population), the concept of Universal health coverage (UHC) has been brought up by concerning stakeholders. As per the most accepted explanation of WHO, UHC is defined terms of arranging and ensuring all kinds of health care in every aspect. It depends upon the need and demographic profile of population, if they demand for preventive, curative or any other intervention to combat the burden of diseases. The element of financial burden of disease is also included so as not to cause any financial hardship to the patient for the service provided (WHO, 2010). The term "services" have an important dimension while ensuring the UHC to any population. Services are meant to be provided by human resources under different capacities, therefore UHC is heavily dependent upon the necessary or existing stock of human resources along with the other requirements like infrastructure, medicine etc. Here the necessary stock means the required number of medical staff to cater to a particular segment or number of population, while existing stock is the actual number of medical staff working for that population. Keeping other factors aside and discussing about the Human Resources for Health (HRH), it basically consists of physicians from private and public sectors, nurses, midwives, pharmacists, technicians and other paramedical personnel. There is also a parallel kind of system in India, which consists of, informal sector health workers like AYUSH[2] doctors which is also known as traditional medicine practitioners, community health workers and volunteers.

At the global level, multilateral bodies and organisations have recognised the importance of the stock of HRH in achieving UHC and other health related goals. It has been argued that in countries of Africa and South Asia including India, targets of health described in the Millennium Development Goals (MDGs) could not be realised fully because of the deficiencies in performing of health system across these regions. And availability of HRH is being one of the most important factors, pointed out by policy makers for not achieving health related targets. This was perhaps one of the reasons which promoted different stakeholders at United Nations to include HRH as an important cross cutting target in realising upcoming ambitious goals and targets of Sustainable Development Goals (SDGs), which succeeded MDGs in December 2015. WHO has drawn attention towards this issue in its World Health Report, published in 2006, whereby the importance of adequate man power

[2] AYUSH= Department of Ayurvedic, Yoga and Naturopathy, Unani, Siddha and Homeopathy. This department is under Ministry of Health and Family Welfare, and got this name of AYUSH in 2003. Before that, it was known by the name of Department of Indian Systems of Medicine and Homeopathy.

in realisation of UHC for concerned population has been pointed out in an elaborate manner. Several other independent publications and research followed up, which subsequently analysed the importance of HRH in achieving health care. These studies are country specific and indicating towards the significance of HRH.

Ngah et al (2013) conducted their study on West African country Cameroon's labour market for HRH, and pointed out that the system of health care had been suffering from the crisis of HRH because of the poor production, uneven distribution, mis-management of their recruitment plans and many other structural problems in retaining them including their migration to abroad. In a similar study done by Abuagla et al (2013) in East African country Sudan, concluded that maldistribution of health workers, dynamics of labour market in country along with their international migration has posed several challenges to Sudan's health care system. Sousa et al (2013) in their study mentioned that developed and developing countries lack adequate health workforce, which is one of the hindering factors in achieving health care, both in terms of quality and accessibility. Health workforce is devoid of proper skills to deliver quality in health services for their population, which is an important factor to be considered for health care providers (Sousa et al., 2013). These researchers emphasise to study the dynamics of labour market for health professionals while segregating them from the overall health care market, which is based on need-based approach.

Need-based approach estimates the number of health workers as per the requirement of the population in a given geographical area. While considering upon the HRH, it is again composed of various personnel as per the services they provide in health care market. Nurses, paramedics, lab assistants, other ancillary staffs are among those who play critical role in delivering various health services to the population. But among all these, the role of physicians (generalists and specialists as well) is a pivotal one. Health economists have always realised their importance and unanimously accept the impacting dynamics of their labour market on overall health care system of any country. As Evans (1974) emphasised that health market involves many players including various agencies, regulators and many others but physicians is the key player of the system. Levitt et al, (1998) also endorses the importance of physicians as an important segment of health market. Therefore, they exert significance influence over the market of health care in terms of their high skilled labour and thereby creating their own specialised and peculiar form of labour market.

In this backdrop, this chapter is an attempt to look into how health economics have analysed the HRH in terms of physicians as an important component. This chapter will further explore into the realm of available studies which have been undertaken on labour market for physicians in India, both theoretically as well as empirically. It will start by enquiring into the concept of health as component of human capital in the domain of theory as well as in empirics. Further section will look into the role of HRH in literature and then will come down to the studies that were undertaken to conceptualise the importance of physicians in general as well as in particular case of Indian health care system. The chapter will end with the summarisation of some prominent points and gaps that have come out of the literature survey.

2.2 Concept of Health as One of the Components of Human Capital

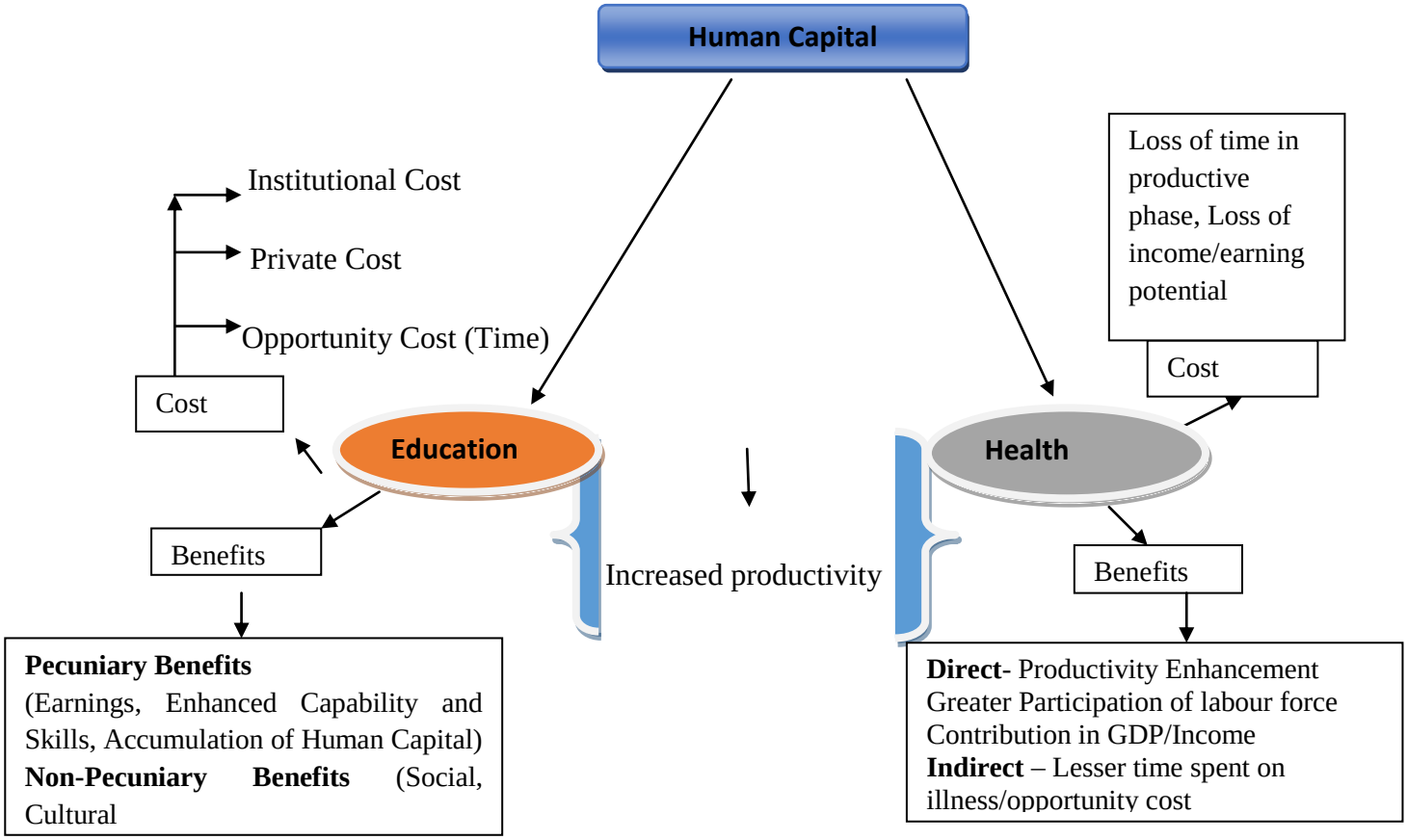
The economic importance of being in good health has established itself in the literature of Human Capital. Earlier, much of the work has been concerned with physical capital and growth rate of labour force as the major determinant for economic growth. However, empirical studies found it hard to explain the residual growth in GDP and per capita GDP, solely on the basis of capital and growth in labour force. This residual growth constituted a significant proportion of per capita GDP and overall GDP of a country. The attention then shifted towards the other factors, prominently technological change that was brought in capital goods or more specifically embodied technological progress. The other equally important aspect was quality of labour force, which is popularly referred as Human Capital in economic literature. This human capital aspect was considered an important factor in economic growth of a country, but again education was given more weightage to explain the productivity of human capital. Economists like Mushkin (1962), Arrow (1963) and Grossman (1972) have brought this fact to the forefront of economic analysis that relationship between productivity and better health is indispensible for economic growth. Their analysis showed that health of population along with the education affect the qualitative aspect of human capital. After that, a large chunk of theoretical and empirical literature emerged which explained the health along with the education as determinants for inclusive growth in any country. Barro & Sala-i-Martin (2004) has shown empirically that higher output is a function of increment in education and improvement in health of the population. They tried to bring out the association between aggregate economic growth and human

capital. This section will trace as how health has been conceptualised as one of the most significant components of human capital.

It has to be mentioned that in writings of Schultz (1962), who pioneered the concept of human capital, there were discussions about education, training, health and migration. But even after the discussion over these variables, many of the research work that followed later, were imbued with the discussions of earning potential (which is considered a direct function of level of education of an individual) of human capital. Health, which is an equally contributing factor, did not find much importance in these discussions. Perhaps this fact could be devoted to the reason that health as a human capital rests on certain different notions as compared to the education and training and other related skills.

Gary Becker (2007) in some of his relatively newer set of articles recognised this fact in an assertive manner that health as a human capital carries a different concept in itself, and therefore should be dealt in a different theoretical and conceptual setup. He further pointed out that health economics is mostly concerned with how the resources should be allocated to ensure better service delivery through various institutional setups (Becker, 2007). He drew attention of policy makers in the area of financing management of health coverage system, public- private dichotomy in provision of services, problems of moral hazard and role of incentives for HRH like doctors. Figure 2.1 shows the components of human capital which rest on health and education. Subsequently these two factors comprise of their own cost and benefits.

Figure 2.1: Components of Human Capital



Source: Author

After the emergence of health economics, and admission of this fact that health is another segment of human capital, a new terminology is devised by the name of "health human capital" in subsequent studies (Schultz 1999; Casasnovas 2005). This differentiated it from the earlier mentioned studies of Mankiw (1992) and Barro & Sala-i-Martin (1995), which considered education as almost apposite to human capital.[3] General literature of human capital as presented by Schultz, Mushkin, Becker and Lucas , have mentioned about the difficulties in measurement aspect of health as human capital, which makes it different from education[4] (Schultz 1961; Mushkin 1962; Becker 1964; Lucas 1988). The conceptualisation of health in terms of human capital and its further measurement are quite complex. WHO

[3] It can be argued that considering education as only variable in Human Capital Model renders the model mis-specification error (Mincer, 1958; Weisbrod, 1961; Kiker, 1969). How various other components including health have been incorporated in human capital and shaping it into its modern form, are discussed in detail in Chapter Three.

[4] Although measurement of human capital while incorporating education as a variable has its own difficulties, which are widely discussed in literature(*see Psachropoulos, G., 1986).*

(1948) defined health as complete well-being[5] of an individual in terms of physical and mental states, and beyond the only consideration of absence of any kind of disease or illness. This definition may have specification problems while modelling health into the domain of human capital. Further the conceptualisation of well-being is in itself a contested domain among economists (see the Footnote 20).

Modelling of health in human capital models encounters the problem of endogeneity, whereby it shows its positive correlation with other different forms of derived human capital. For example, healthy people can invest more in human capital by investing in re-skilling or upgradation of their skills, or by extracting more benefits in comparison to those, who does not enjoy better health (Fuchs 2004). Grossman (1972) has pointed out that health as a human capital involves time factor, which is to devote more time for productive activities in terms of investing time on acquiring skills or using their labour for production instead of letting the time to elapse for recuperating from illness or other incapacities arising out of bad health. Before the writings of Grossman, Arrow had suggested to demarcate between the market for health care and health *per se,* as both involve different set of specificities (Arrow, 1963). He observed that proper delineation of subject matter between medical care and health is important. He centred his analysis around medical care, and not health, thereby mentioning the services of organisation, physicians, hospitals and other related markets. In line of Arrow, Klarman (1963) argued that market for health care is tradable[6] with all its imperfections while health *per se* is not because of its abstract nature. Arrow (1963) observed this because of intrinsic technical attribute of medical care, whereby process and final product (treatment) are

[5] Well- being has different conceptual grounding across the various disciplines including economics. This term has a pejorative meaning loaded with value judgements related to subjective measures by different individuals. Yet, Economics has attempted to incorporate economic well-being as a major component of overall well-being of an individual (see Dasgupta, 1995). Policymakers have always aspired to improve the well-being of population by working on different concepts. There is no universal definition of well-being, but a common consensus in terms of its outcome, which is to describe the people's life situations in which they have been living. Economists have tried to measure well-being based on two categories, viz., subjective and objective. Objective measures include socio-economic and environmental variables, by applying the cardinal measures. On the other hand, subjective measures use people's feelings, satisfaction with their lives, happiness etc, through ranking methods. Harvard Business Review in one of its article observed the developments that shifted the course of measuring well-being from linking it to GDP of a country to the terms like 'prosperity' and capabilities lifting the ideas from the work of Stiglitz, Sen and Fitoussi (see Fox, 2012 in Harvard Business Review, January-February, 2012).

[6] But again there exists a good range of health care services, which is not tradable. For example, physical exercise, which is an important input for good health, can't be traded, although facilities for exercise are, the exercise itself is not. Also, those health inputs which pertain to behavioural changes of an individual can again skip from the purview of trade (except consultancy services).

almost identical. Another specificity is in terms of quality of medical treatment, which a patient can not decide until it is not consumed. In case of other services or product, an individual can decide or pre-test and then decide to consume it finally. In this regard, the role of physician becomes important for deciding on behalf of the patient. This generates the problem of asymmetric information between principal and agent (here doctor and patient respectively)- widely discussed in economic theoretical framework. This specification of doctor-patient relationship is further modelled as physician induced demand (PID) hypothesis. This kind of information asymmetry between patient and provider (most notable physician) has advantages and disadvantages for both the parties in terms of inputs and process of health production (Leonard 2003; Leonard & Zivin 2005).

On the basis of abovementioned earlier studies, Claudia (2008), pointed out that it is actually health care economics which dominated the studies in later decades, and not health economics. Therefore, it has been argued that while constructing the model it has to be pre-determined that whether it's model for demand or health care or demand for health (Edward 2001; Claudia 2008).

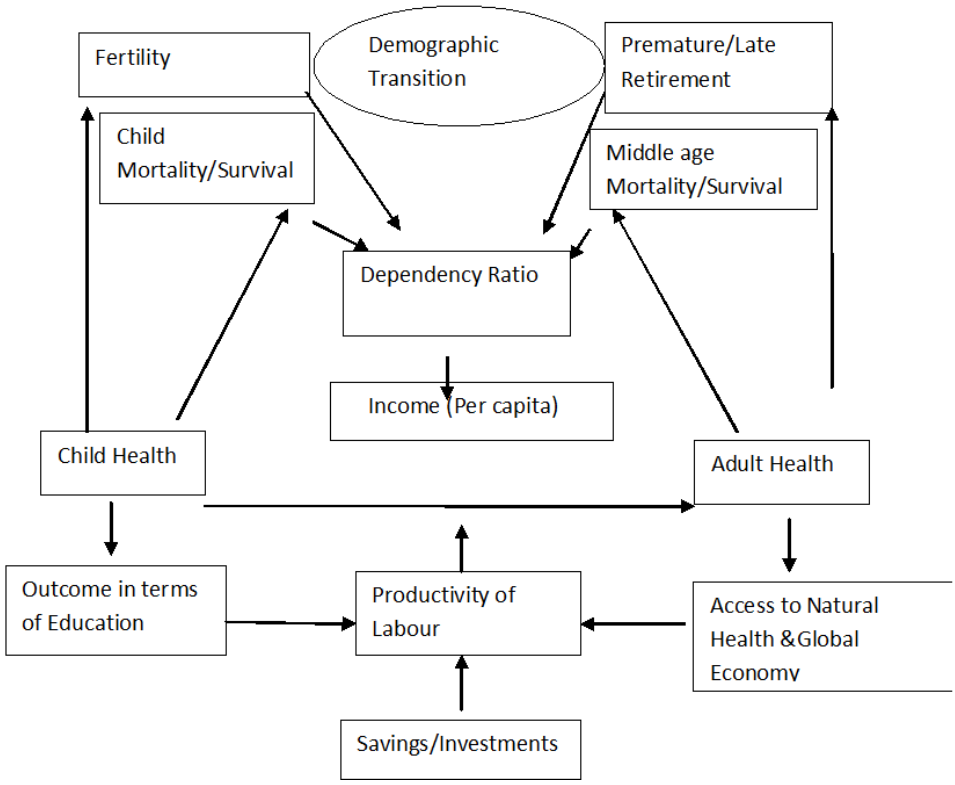
2.2.1 Empirical Literature on Health as Human Capital

Empirically, effect of health on economic growth has been observed at macro and micro-economic level as well. At the micro-level, this discussion is more extensive (see Schultz, 2002), because of the availability of household data. Cross-country level studies have shown positive and quite significant linkages between per capita GDP and aggregate health measures like IMR and life expectancy (World Bank 1994; Barro & Lee 1994; Barro 1996; Gallup & Sachs 2000). In an earlier note, Sorkin (1977) had conducted an empirical analysis to show that reductions in mortality had a positive effect on economic growth. Malenbaum (1970) in his study of 22 poor countries, used stepwise regression to show the effect of health related variables on output. In his study, the dependent variable was agricultural output, while independent variables included health related data. He concluded that government intervention through health welfare programs to improve health can positively affect the quality and quantity of labour force. Wakeel & Alani (2012) in their study on Nigeria, used growth accounting model and regression for showing the contribution of health and education in the economic growth. The study found that an increment of 1 % in life expectancy raised the rate of economic growth by 2.73 % ,*ceteris paribus*.

Another strand of empirical literature has explained the economic growth by applying the life-cycle models. In this application, the determinant is taken as an individual's health, while the effect is studied on consumption, wealth and future income of individual (Lilliard & Weiss 1997; Smith 1998). Before this, World Bank has already catalysed the research in exploring the relationship of economic growth and health (WDR, 1993). Some of the studies that are conducted on Latin America explored the technical relationship between regional health parameters and economic growth by applying regression technique, following the earlier models of Barro (Mayer et al, 2001). For these regions, the estimates of health were more robust than the education.

In terms of epidemiological profile of population, Ainsworth & Over (1994), found that prevalence of AIDS in young population of Africa have negative impact on country's saving rates and have reduced labour productivity and therefore hampering the economic development of the country. Figure 2.2, which has been developed by WHO (1999) shows the inter-linkages among various health outcomes and economic growth.

Figure 2.2 Linkages between Health Outcomes and Economic Growth



Source: The World Health Report, WHO, 1999, p.11

While modelling health outcomes in economic growth models, these studies have encountered the problems of endogenous causality. The effect is more pronounced when

income and health of an individual are taken as variable in the model. Luft (1978) provides an informal explanation of this observed causality in terms of poverty caused by illness and because of this, sick people can't earn income and become poor and vice-versa. To describe the direction of this causality between health and income, Smith (1998) used the life cycle models whereby health condition is linked with consumption, welfare and future income of an individual.

Hamoudi & Sachs (1999) considered exogenous factors which affect the determinants of health outcome of a person, at the same time establishing the endogenous relationship between economic growth and health. They pointed out that measuring the impact of health on economic growth, in terms of life expectancy as its proxy variable, does not encompass all other significant dimensions of health, therefore rendering the problem of endogeneity to the model. Bloom and Canning (2000) has mentioned this aspect by suggesting to include all other dimensions of health like morbidity, disability and mortality.

Studies have established the symbiotic relationship between economic growth and health of the population by using various determinants of health, as per the availability of data. Nonetheless, they have their own theoretical as well as empirical repercussions in terms of chosen variables, modelling techniques and causality. However they tried to establish this fact that health is an important determinant in productivity of labour inter alia economic growth.

2.2.2 Specification of Health as Variable in Human Capital

In previous sections, it has been discussed explicitly that health did not find much space as a technical and very significant variable while formulating the model of human capital. The earlier works of Schultz, Mincer and Becker had more or less standardised the value of education and acquired skills as major factors for the formation and investment in human capital subsequently. This has led to establishment of an altogether new discipline known as economics of education. Although Becker in his work, recognised death rate, birth rate and migration of population as determinants of population of any country (Becker, 1964) but health as a part of human capital is asserted in his article published in 2007 (Becker, 2007), which explicitly consider health as a part of human capital. Labour force participation rate depends upon various factors like age group of the population and allocation of time in a particular occupation, as defined by Becker (1962). Absence of disease or illness has a defined impact on labour force participation in terms of allocation of time between

recovering from illness and engagement in employment. Earlier, Bergsten (1960) on the basis of his survey in UK, tried to show that there exists an inverse relation between time lost due to illness and earned income.

Grossman (1972) in his pioneer study modelled health as human capital and attempted to show determinants of demand for health. Grossman's model used the idea of time allocation for health as capital stock from Becker's time allocation model and observed the significance of medical care in the health's consumption function, which impacts the demand for health. Grossman considered that an individual has initial stock of health which he inherits and it depreciates over a period of time like the physical capital. In account to replenish the stock of this capital of health, people purchase medical care from health personnel or any other agency and also allocate time on healthy activities like exercise. Concept of time allocation rests on the constraints which are in the forms of time lost in sickness, time in producing good health, time spent on earning or work. Grossman's model used the assumption of maximisation of neo-classical individual utility function by individual consumer. His function contained consumption of diseases free days and other household commodity which are subject to his overall budget constraint in whole life cycle. His budget basket included expenditure on purchase of asset, labour income and medical care. His model which can be interpreted in simplest form is-

Suppose a consumer has well defined conventional utility function as,

$$U = f(HE_{o,}\, HE_{i,}\, Z_i) \qquad \text{-----(1)}$$

Where,

HE_o = Health of Individual

HE_i = health of individual after nth time period

Z_i = other consumable commodities during nth time period

Length of life is assumed to be fixed which renders this variable as endogenous one. .

By definition, it can be said that

$$HE_{i+1} - HE_i = I_i - \Delta_i HE_i \qquad \text{-----(2)}$$

Whereby,

I_i = gross investment

Δ_i = Depreciation rate in the i^{th} period

The rate of depreciation is assumed to be exogenous, but they may vary with the age of individual. Consumer produce gross investments in the health and the other commodities in the utility function according to a set of household production function:

$$I_i = f(M_i, THE_i, E_i), \quad \text{-----(3)}$$

$$Zi = f(X_i, T_i, E_i) \quad \text{-----(4)}$$

In the equation (3) M_i represents medical care, in equation (4) X_i is taken to denote those inputs or goods which is required for the production for the production of commodity Z_i, THE_i and T_i are the time inputs, and E_i represents the human capital stock. It is assumed in this model that a shift in human capital changes the efficiency of the production process in the non-market sector of the economy, just as a shift in technology changes the efficiency of the production process in the market sector. It is also assumed that all production functions are homogenous of degree one in goods and time inputs. Therefore the gross investment function can be written as

$$I_i = M_i(t_i, E_i) \quad \text{-----(5)}$$

whereby,

$$t_i = THE_i / M_i.$$

In Grossman's investment function model, medical care has been treated as valuable market good.

However critics argued that Grossman's model treated human capital as exogenous variable and it did not consider the accumulation of human capital (Hokayem, 2010). Another critique argued that the model was quite deterministic in the sense that an individual has full control over his stock of health capital, which can not be true (Zweifel 2012; Kaestner 2013). Zweifel et al (2009) offers an alternative framework where the individual faces a stochastic process in which the individual can either become sick or healthy. If the individual becomes sick, the individual will invest in health capital (e.g. visit a physician). If the individual becomes healthy, he will not invest in health-capital. Later on life cycle models have replaced the Grossman's investment model to specify health in human capital models. Grossman's

model is based on derived demand schedule of health care or more specifically medical care. Having a simple deterministic nature, his model assumed that investment in medical care produce constant returns throughout life, which is an unrealistic assumption. Health of an individual is full of uncertainty as many of the damages are irreparable, while Grossman's model allow complete health repair in his model.

2.3 Significance of Human Resource in Health Care Market

WHO (2006) defined HRH for health as stock of those workers who engage themselves in promotion, prevention and protection activities for the health of the population. It includes heath workers from public as well as from the private domain and also involves community health workers. It is an umbrella term embracing all those kind of health workers, who are engaged in some or other kind of activities which involve improvement of public health or individual health, be it promotive, curative or preventive or related to spreading the awareness of health related activities. WHO (2007) used the term health system workforce or more precisely health workforce[7] which also includes policy makers, health scientists, pharmacists and other clerical staff. Whatsoever is the definition of health workforce, the literature has discussed their overall importance in maintaining and improving the health of the population. WDR (1993), defined HRH as the insurer of efficiency of health system. Narsimhan et al (2004) argued that HRH is the 'most important aspect of health care system'. Anand & Baernighausen (2007)[8] stated that availability of HRH in any region or country can explain maternal mortality rates, IMR and U5MR significantly[9]. Their analysis supported the fact that all these health indicators are sufficiently responsive to the availability of health

[7] All these definitions and demarcations within the health workforce has emanated from the concept of health system, which is meant to cater the heath related need (which includes all kind of interventions and curative processes) of the population, as envisaged by WHO. However the classification of health worker is based on the salary or wages that they get while serving under the health system. While analysing the market for health worker, availability of data is restricted to paid workers, which again creates many limitations and contradictions while analysing the complete scenario of health labour market. For example, many people look after their mother or children at home or elsewhere, don't get considered as health worker as they are not paid.

[8] In their study they used multiple regression analysis by labelling IMR, U5MR and MMR as dependent variables picking up from WHO dataset, while aggregate density of HRH was taken as independent variable, by controlling the other variables like poverty, female literacy, income. Their sample consisted of 117 countries and result affirmed that HRH density is a significant variable in accounting for IMR, U5MR and MMR.

[9] To define the suitable parameters for measuring the health status of a population has always been a variegated and multifaceted problem. Researchers have used to measure it in terms of diverse range of indicators like MMR, life expectancy, morbidity, IMR, nutritional status and other related variables. However among the available parameters, Life Expectancy at birth and IMR are the widely used ones for community health because of the availability of internationally comparable dataset and for the sake of convenience in measurement. Of late, morbidity (which describes the status of illness of an individual) has been emerging as a reliable indicator of well-being and health status of the population (Dilip, 2002).

workers, if considered in health models. Among others, maternal mortality rates are most responsive to presence of skilled health personnel, perhaps because maternal and reproductive health require appropriate and timely attention. Nonetheless, there is not any universal and well defined parameter to estimate the optimal level of health workers for a population.

Gupta et al (2003) observed evidences about significant positive correlation between number of HRH and economic development. They also explained that those countries which spend higher percentage of their GDP on health, tend to have more numbers of HRH for their health systems. But they also mentioned that, apart from expenditure on health as percentage of GDP, various other factors are responsible for the availability of HRH in any region. Geographical location and other interrelated factors like climate, rural and urban settings, basic facilities at the hospital, connectivity, cultural and political values of that region with their inter-linkages contribute in maintaining the availability and distribution of HRH. As Kabene et al (2006) argued in their paper that emergence of various arguments and issues pertaining to availability of health workforce in any region depend upon several other factors. Issues may arise from the domain of their composition, training and institution, their migration to abroad, level of GDP growth with all kinds of socio-economic and cultural factors of the concerned country. From the above discussion, it can be concluded that relationship between health care delivery system and the way a country manages its production and distribution of HRH are quite complex and involves the interplay of various factors which are not confined to domain of economic factors only. Therefore this relationship merits further examination.

2.3.1 Role of Physicians in Human Resource for Health

Generally, health care market is composed of several other interdependent components, which have their own market structure. Beginning from the medical education, which has a completely different dynamics in terms of its market, other segment has also different economic specificities, like pharmaceuticals, infrastructure etc. Within the medical education sector, there is different dynamics for private institutions involved in medical care and government sponsored ones. Among these components, undoubtedly, market for physicians has very significant role to play in implementing the objectives of health care services. Health economists have acknowledged this fact with one accord that description of this sector is incomplete without considering physicians as an important pillar. Evans (1974) asserted this fact while describing four players in this field namely patient who demand the

services, agencies who finance these services, a provider which is usually considered a physician and a regulator (probably government). Cassels(1995) mentioned that Health workers are one of the fundamental components, which is important to maintain the institutional character of health system. White (1999) termed physician as captain of the team.

Managing the skill mix of different health personnel and determinants of their service provision are important factors for improving the health system performance, as discussed by Murray & Frank (2000). Mills et al (2006), further supported the latter's argument by suggesting to change the management of health workers to improve health worker's own performance. Many of the studies have reported a strong and positive correlation between different health outcome indicators like IMR, U5MR and density of physicians in terms of ratio of physician to population (Robinson & Wharrad, 2000). Higher the number of health personnel, lower will be the mortality rates and so the other way around. Chen et al, (2004) observed that countries having higher level of physicians and nurses have experienced better health of their population. In the same study, they argued that for building a sustainable health care system in LDCs, proper retention and strengthening of health personnel are the prerequisites. Kim & Moody (1992) found that density of physicians have a favourable effect on IMR. They further found that as life expectancy increases in the transition phase of less developed countries to the industrialised ones, the effect of heath personnel density on IMR decreases. Some of the studies like of Aakvik & Holmas (2006) have taken number of public doctors as proxy to access variable while analysing the impact of economic condition and access to primary health care on health outcomes in Norway. They found a significant association between public doctors and mortality rates of the studied population. Speybroeck et al (2006) studied the univariate association between survival rates of the newborn infants and availability of HRH. Anand & Barnighausen (2007) have found that density of health workforce is a significant variable in determining the vaccination coverage. Vaccination rate will depend directly upon the presence of health workers. Also, the higher will be the vaccination rate, lower will be the infant mortality rate in that area.

However, WHO (2007) in one of its policy document used the term 'service delivery' as a parallel to physicians and nurses, among the six essential building blocks of health care system (WHO,2007). Nonetheless, in one of its earlier reports in 2006, WHO admitted that 68.9 % of health expenditure is incurred on health workers in the form of salaries, wages and other emoluments (WHO, 2006). Not only this, but most of the other expenditure in the form of non-wage recurrent expenditure get effected form the decision of physicians in the form of

prescriptions, laboratory testing, diagnostics, and others. Their influence on out of pocket expenditure by the patient on health, is already established empirically. Therefore, it can be argued that decision and functioning of physicians in a health care system has both direct and indirect bearings on whole health care system. Their need in terms of density and to address the issue of epidemiological transition in terms of skill composition along with distribution across the geographical regions has always attracted the attention of policy makers. Recent publications from WHO and World Bank have asserted this fact (Mcpake et al, 2013; WHO 2012). They further devised various policy interventions to combat the problem of availability and skewed distribution of health workers in LDCs and LMICs while estimating the desirable ratios of doctor population, nurse- population, and total health worker-population. Doctor-population ratio has been considered as significant variable in checking the mortality of population.

The abovementioned discussion in literature substantiates the fact that analysis of physicians' labour market is important in order to frame any policy for the UHC of the population.

2.3.2 Studies on Labour Market for Physicians

The literature in this section can be divided into two complementing strands based on the approach and framework adopted by researchers of health economics. In the first approach, Physicians are treated as agency in the market of heath care. On the other hand, the second approach have emerged in recent studies (pioneered by World Bank) which analysed physicians as part of the high skill labour force and argued to apply the economic labour market framework.

2.3.2.1 Physician as an Agency

In this strand of literature, it is recognised that health care sector is highly labour intensive, and therefore physicians as a part of high skilled labour, influence the health care sector by creating their own market. Starting from the seminal article of Arrow (1963), different models are proposed to analyse the market for physicians by considering them as an agency. Asymmetric information models were proposed because of the fact that physicians are supplier of the services and at the same time can influence the demand of service by the patient (Akerlof, 1970; Newhouse et al 1982; Weisbrod 1991; Rice 2009). In this situation, same individual is the agency who determines the market forces of demand and supply, which is again a case of market failure (Arrow, 1963; Newhouse et al, 1982). Folland et al

(1997) have tried to explain the market for physicians in the line of principal agent theory but failed to propose any model to explain that, because of lack of perfect information on the part of patient. However, Zweifel & Breyer (1997) proposed a specific model with the help of agency model while trying to address the issue of information asymmetry but still many explanations were left out.

Researchers argued that assumptions of market (in any of its form like perfect competition or imperfect models like oligopoly or monopoly) are not perfectly applicable in case of physician's market structure. They reasoned that economic concepts of health care are unique and so the cost and supply could not be determined on the basis of market forces alone (Akin et al, 1987). Competitive models based on price taking behaviour of firms or industry, can not explain the pricing mechanism of physicians, and further cost reduction through price competition is not applicable in this case. Because of this, some studies resorted to the imperfect competition model to explain the physician's market in terms of discriminating monopolist (Kessel, 1958; Klarman, 1963; Newhouse, 1970; Ameringer, 2008; Havighurst & Richman, 2011). This is based on the observation that physicians charge or decide their fee at the time of production of their services more often, and also on the basis of ability to pay or income of the patient. But again, this case is more applicable to privately practicing physicians, while in case of government appointed doctors, the case may be different. The salary or wages of doctors are fixed and revised from time to time by the government and health services prices are fixed as per the concept of public good. Pile et al (2008) explained the behaviour of physician as oligopolistic when they work with private hospitals or concentrated in few locally available hospitals. Regions of LDC or LMICs which have lower concentration of physicians, may exercise their monopoly behaviour or as a discriminating monopolist depending upon the population characteristics and other types of available health services in that region. This behaviour is further explained by Rossiter & Willensky (1984) as Physician Induced Demand (PID) Hypothesis[10], which is more or less based on the outcome of monopolistic market situations. The support of PID has been found in some empirical studies done by Cromwell & Mitchell (1986), Izumida et al (1999) & Noguchi et al (2005). Although a large body of empirical literature exists for the support of PID hypothesis, but more research is needed in case of developing and LMICs countries, where it is difficult to find any substantive study in this area. Furthermore, assumptions and

[10] Development of PID hypothesis is credited to Evans (1974), who defined it as influencing the choice of patient's care, while ignoring the best possible cost-effective solution from the patient's point of view. For more detail see T. Mcguire (2000) :The Handbook of Health Economics.

effect of PID hypothesis may differ across the geographical location of the physicians, incentives, physician specialities, category and social structure of patients and mode of employment (Johnson, 2014). Many of the assumptions are debated, for example, PID assumes that patient is completely ignorant about the profit maximising behaviour of physician or about their own ailment, which is not true for every patient (Carlsen &Grytten 2000; Ahmad & Shaikh 2009). Furthermore, physicians may not behave always as profit maximising agent, given the socio-cultural context, location of practice and other ethical considerations of this profession.

2.3.2.2 Physician as Labour: Approach from Labour Market Economics

Application of labour economics for health workers is quite different, compared to the general application of health economics in this area. In the domain of literature concerning the labour market for physicians in general, a good deal of descriptive and empirical literature exists. In these descriptive analyses, the usual concern of deficient supply of health personnel and their geographical skewness in rural or under-served areas has been highlighted (Zurn et al, 2004). Researchers tried to address the policy options in terms of factors affecting the health workers' preferences to serve in a particular area (rural /urban or remote areas) and their corresponding choices to turn over among the available options to practice (Martineau et al. 2006). These studies basically followed the normative approach by describing the existing situation of health workforce in a given country and then recommending the potential interventions. Dolea et al (2010) in their paper provided an extensive review of twenty seven studies relevant to this aspect. He found that out of the 14,746 potential papers almost all of them are concerned with skewness in distribution of health workforce. Although some of them had analysed the interventions that were administered for rural retention of health personnel. Scanning through these available literature, it has come out that most of them are conducted on high-income or developed countries such as Australia, Canada, Japan, US, UK, Norway, New Zealand etc., while a very few studies have been conducted in the LDCs or developing countries and India is no exception to that. Given the sustained crisis of human resource in underdeveloped countries, most prominent being the countries of Sab-Saharan Africa, of late some studies have drawn the attention to analyse the labour market for health professionals in these countries. Countries from Africa, Latin America and South-East Asia have drawn the attention from different stakeholders of health related disciplines and policy making bodies for analysing their market for health workers and studying the factors which influence choices and preferences for their practice location (Dolea et al, 2010).

Medical practitioners have different categories of incentives to work in a particular setting which can be categorised as monetary (direct and indirect), educational, regulatory, management related, environmental, social and other external incentives, which need to be taken into account. As Pena et al (2010) considered that specialisation programme is one of the most indirect non-financial incentives for physicians which help in retaining them in rural areas. Mcpake et al (2014) on the basis of other studies, argued that most of the health workers are not only concerned about their earnings, but their utility function involve several other factors like health outcome of patient. These non-economic motivations are responsible for creating heterogeneity in their behavioural pattern and hence affecting the supply of health services to the population. Burstein & Cromwell (1985) argued that studies related to interlinkage between level of medical education and economic returns are mostly conducted for nurses rather than doctors. Those studies which pertain to doctors, have mostly analysed their medical education in terms of gaining more specialist degrees and return to that level of speciality (Cheng et al, 2012). Sivey et al (2012) observed that although non-economic factors have an influence over the services supplied by physicians but not as significant as expected future earnings.

Similarly some other studies have marked other non-pecuniary motivations to work in health labour market. It might be appropriate to mention here, that globally we find a vast expanse of literature which observes the job choices of health personnel. Most of them have used Discrete Choice Experiment (DCE) as a tool to inform the policy discussion about the choices of health personnel for locating their practice areas. Dieleman et al., (2003) in his study on Vietnam, found that health workers are responsive towards the management initiatives and appraisal for their work apart from the wages to work in a particular area. Similarly, Sempowski (2004) found that financial incentives are important to retain them in desired areas but not the sole and adequate factor. Matsumoto et al., (2005) in his study of Japanese doctors concluded, that during the training period a prior exposure to students for rural areas was found to be one of the determinants in their decision to work in rural areas. Mathauer & Imhoff (2006) have found that in African context professional dissatisfaction had been an influential factor in determining their choices to serve in rural areas. Vujicic et al., (2011) found that advancement in career opportunities in terms of further specialisation have drawn physicians from remote areas towards urban centres. Razee et al.,(2012) investigated about the social factors impacting on performance and motivation of thirty three health workers of a province in Papua New Guinea, located in South-East Asian region, and found that living with community has positive impact on their motivation. It can be argued from

these studies that wage is not the only factor which determines the choices of health worker for the entry in labour market and their functioning in a particular location but a complex set of multiple factors having different weight in terms of their impact factor.

In terms of data, variables and methodology, many of the studies pertaining to analysis of the labour market for physicians have focussed upon cross sectional data which has the problem of missing information about those variables which affect a health worker's decision to enter into the labour market. Another important observation is that they are conducted for nurses' supply and not physicians *per se*. For example, Askildsen et al.,(2003) have conducted their study on Norwegian nurses using a panel data set to investigate their supply in their labour market. Contrary to the general theoretical conception that increased wage will augment the nurses' supply because of positive labour supply elasticities (negative income effect is overcome by positive substitution effect), they found the evidence somewhat contrary. Even in studies done on nurses' supply in UK and US market, wage elasticities have come out to be small, lesser than the expected (Askildsen et al, 2003). Kruk et al (2010) has conducted a discrete choice experiment (DCE) on fourth year medical students to determine the specific job attributes for working in a hypothetical rural posting in Ghana, while mentioning that little research has been conducted in low income countries over practice location of physicians.

2.3.3. Empirical Note

Conventional economic literature is concentrated towards the pecuniary aspects of labour market, in which labour supply decisions are function of wages (either fixed by employer or recruiting agency from time to time or cleared by the competitive market forces). By this corollary, the same has been applied to the analysis labour market of health personnel by health economists. Of late, health economists have recognised that excludability of non-economic factors in the analysis of labour supply decisions of nurses and physicians may have different impact on various policy formulations. Traditional approaches are based on solving the constraints in availability of HRH, which was based on estimating the number of HRH as per the demographic and epidemiological profile of population. The gap between estimated demand through the density of doctors or nurses and their total stock is used to be filled by scaling up the medical institutes or to increase their wages to serve in underserved areas (Mcpake et al, 2013). Application of labour market dynamics with the consideration of other important behavioural and non-economic variables remained little unknown, that too in case of LMICs and LDCs. Therefore, despite the comprehensive literature on crisis of human

resource in health sector, few analyses are available with framework of labour economics (Scheffler et al. 2012, Mcpake et al, 2014).

2.3.3.1 Studies on Pecuniary Factors: Wage Rate

Emanating from the analysis of classical economists like Adam Smith, level of pay has been always a prime indicator for attractiveness of any job and therefore determines the long run supply of labour in that particular profession. Labour force participation rate and hours supplied has been a function of prevailing wage rate in the market. The interplay of income and substitution effects between hours supplied for work and leisure time has been a factor for nurses and physicians' labour supply decision in some of the studies available so far.

Benham's study (1971) is considered as one of the pioneer studies on registered nurses' labour supply which found that increase in per capita income had a positive impact on their labour force participation. Study by Sloan & Richupan (1975) drew an association between the wages of married nurses and the hours supplied. They noticed a significant and positive correlation between these two variables. However in case of single nurses, this association was not so strong because of lower elasticity. Brewer's study (1996) also confirmed this result. But further studies have found small elasticities of wages to the working hour of nurses, which meant that to increase their working hour, a large increment in wage bill was needed (Link & Settle, 1979; Phillips, 1995; Ault & Rutman, 1994; Chiha & Link, 2003; Askildsen et al, 2003), albeit, these studies were different in terms of estimation techniques and also the estimator chosen for variable.

Some studies have pointed out that type of institution, which employs health personnel are also important for deriving the labour supply effects. The work contract under the employing agency defines the conditions and also the mode of payment, which may or may not include the monetary compensation for work, if it has to be beyond normal duty (Askildsen et al, 2003). Holmas (2002) in his study found that shifting in duty during working hours has been statistically significant but has negative effect on supplying their working hours and also on their decision to quit work in public hospitals, voluntarily. While estimating the impact of future expected earning over the choices of speciality for physicians, the results are mixed. Sloan (1975) reported positive association between wages and hours supplied for physicians, but the magnitude of association was small. Thornton (1998) and Baltagi et al (2005) also observed the same effect but their estimation technique and so the

strength of association varied consequently. Study by Thornton (2000) and Thornton & Esposto(2003) found that wages are not an important factor in speciality choice of physicians, rather it was weekly hours of working which is found to be more significant. 545 Physicians across the fourteen specialities from Wisconsin, were taken for study by Schulz et al (1997) and they found that psychiatrists are more dissatisfied with their discipline than the others. In terms of gender, Mcmurray et al (2000) observed that female doctors tend to be less likely dissatisfied with their careers than their male counterparts. Leigh et al, (2002) found that a positive correlation exists between job satisfaction and physicians' income. He observed further that career satisfaction among physicians further promoted them to provide better service to patients, as the dependent variable in his study was the satisfaction or dissatisfaction of the physician with their career. He further found that increasing age and increased working hours were negatively associated with satisfaction level. While comparing existing studies, it can be argued that wages are most likely to be a better predictor tool to inform the supply of nurses (Phillips, 1995) in comparison to physicians. Job satisfaction of nurses is reported to have a positive correlation with wage rate (Seo et al, 2004). Although these studies predicted wage as important factor for nurses, but the decision to participate in labour force is more confounded by non-pecuniary variables other than wage. This may be due to other significant social factors like, gender and family (Skatun et al, 2005; Chiha & Link, 2003).

In terms of factors like non-labour income, or income of spouse in household, have found to be significant in case of nurses, whereby time given to paid labour get reduced because of spouse's income (Sloan & Richupan, 1975; Phillips, 1995; Skatun et al, 2005). Higher the non-labour income, greater will be the chances nurses' participation in labour market (Phillips, 1995; Holmas, 2002). However, for physicians, income from other sources, saving or spouse's income were not found to be significantly related to their supply of labour (hours supplied at work) (Thornton, 1998; Baltagi et al, 2005).

2.3.3.2 Non-Pecuniary Elements: Job Satisfaction

Economic factors have always been predicted to be influencing the behaviour of physicians or nurses in their labour market in terms of hours supplied. However studies are conducted to report many non-economic aspects for effecting labour supply decisions (Clark, 2001). Employees who have dissatisfaction with their job except wage as a factor, then they probably tend to switch over to next available option. In case of physicians, it has been

reported that those who are employed by the government tend to shift in private practices if they are not satisfied with their working conditions or if they get opportunity then fly over to foreign destination - a phenomenon most commonly seen in LDCs and LMICs (Bockerman and Ilmakunnas, 2004; Nair & Webster, 2013).

Non-economic factors are more pronounced in psychological studies (Lu et al., 2005) because of its association with job satisfaction and motivation (which can be both extrinsic and intrinsic). However developments in labour economics have incorporated non-economic factors in subsequent models. Compensating wage differential model have analysed some aspects like working conditions, to show its impact on employee's utility function by comparing the utility from wages and utility arising from non-pecuniary variables (Lazear, 1995). Scott (2001) argued that psychic utility of an employee from satisfaction of non-economic factors is not measurable, either because of lack of appropriate data or because of mis-specification in the labour supply models. Nonetheless, researchers have tried to build and analyse models to incorporate these factors, for example, Nylenna et al, (2005) attempted to study the overall job satisfaction of Norwegian doctors by analysing the longitudinal data and including different aspects of working situations. Although the study has several limitations because of the validity and reliability of the questions related to subjective well-being of doctors. But on the other hand literature from health economic suggests that non-pecuniary aspects are apropos for public sector physicians' labour market, where wages are not cleared by market forces but fixed by government or state. Therefore, physicians can not negotiate over their wages but perhaps exercise their control over non-economic factors (Scott et al, 2006). Freeman (1977) tried to show that intention of employee to quit the job was more quantitatively determined by non-wage factors than the wages. Pudney & Shields (2000) in their study on nurses attributed non-pecuniary aspects of job for determining nurses' adherence to it in terms of job satisfaction. Physicians' case is more likely to be associated with their job switching and factors responsible for job satisfaction, as indicated by the studies of Sibbald et al, (2003) & Scott et al (2006). Ikenwilo& Scott (2007) found that increased job satisfaction had relation with hours supplied by the physicians, which had inverse relation with each other in some cases.

2.3.3.3 Factors Related to Workplace

Askildsen et al, (2003) analysed that working hours of nurses get affected by the type and situation of workplace where they had been working. The geographical location of

hospital and also the type of workplace like nursing home, private hospital or primary health centre may have an impact over their working hours and so the supply of their service. Baltagi et al, (2005) studied physicians who worked in a more crowded situation at large hospitals had felt the workload more than at any regional centre with lesser workload. Nonetheless, this effect might get mitigated because of strong negative effect of employing themselves in any regional area. Some studies have reported about the co-operation factor among auxiliary staff and physicians, which had an impact over their job satisfaction (Nylenna et al ; 2005 Castle et al, 2006). Organisational behaviour among nurses and physicians had a positive impact on retention of nurses and their job satisfaction (Shields & Ward, 2001; Rosenstein, 2002). Expectation from job and increased stress arising out of different factors at workplace were found to affect the job satisfaction of physicians (Sibbald et al, 2003). Designation of health personnel in any particular working position have found to be significant, but mostly in case of nurses (Holmas, 2002; Askildsen et al, 2003). Seo et al (2004) and Shields & Ward (2001) found that labour supply of nurses or physicians get significantly influenced by workload, stress, workplace designation and lack of future opportunities in career advancement, when analysed in terms of job satisfaction.

2.3.3.4 Demographic Factors

Sloan & Richupan (1975) have not found any significant effect of age on hours supplied by the nurses. Study by Ault & Rutman (1994) reported that age has a negative correlation with the hours supplied by the nurses, but at the same time working hours were affected positively by age, if controlled for sample heterogeneity. Askildsen et al (2003) found that older nurses reported les working hours but with a diminishing rate. For physicians, age was not a significant factor on hours worked (Thornton, 2000) but as they progressed in their age, the tendency to quit or change the job increased (Sibbald et al, 2003; Scott et al, 2006). Experience and tenure had a negative correlation with quitting of the job voluntarily, because of the accumulation of human capital which becomes firm specific over a long period of their working (Holmas, 2002). Young aged physician, who have lesser tenure in any organisation show higher probability for quitting the job (Holmas, 2002).

Marital status and family have been found to be more significant factor for nurses rather than physicians (Holams, 2002; Askildsen et al, 2003; Phillips, 2005). However Baltagi et al (2005) in his study reported that physicians who have younger children, supplied less working hour to their profession, while Sibbald et al (2003) had found that those who

had children of over 18 years of age, had less likelihood to quit the job. An important observation about the female physician was correlation of having children and choice of speciality, in which Potee et al (1999) found that those female physicians who have no children opted for surgical and other demanding specialities and less likely to opt for only MBBS or primary care. Ethnicity and region has also found to be effecting physicians' decision to remain in labour force or to quit (Sibbald et al, 2003).

Table 2.2 below presents a summarised view of some of the important studies, which used empirical estimates and sophisticated econometric techniques to bring out the impact of non-economic and economic factors over the labour supply of physicians.

Table 2.1: Summarisation of Major Empirical Studies on Physicians' Supply Behaviour

Study/(Country where study is conducted)	**Independent Variables**				**Dependent Variables**
	Wage income	**Income of Spouse**	**Non-Labour income**	**Non-Economic Variables**	
Thornton, 2000 (UK)	Included		Included	Included	Choice of speciality
Scott, 2001	Included			Included	Practice choice
Thornton, Esposto, 2003 (US)	Included			Included	Choice of speciality
Sibbald, Bojke, Gravelle, 2003(England)	Included			Included	Voluntary turnover
Scott et al, 2006 (UK)	Included	Included	Included	Included	Voluntary turnover
Ikenwilo, Scott,2007 (Norway)	Included	Included	Included	Included	Supply of Hour
Serra et al ., 2010 (Ethiopia)				Included	Wages/Salary
Sivey et al., 2012	Included				Choice of speciality
Wang & Sweetman, 2013 (Canada)	Included	Included			Hours supplied
Qin Li & Hsieh 2013 (China)	Included				Weekly working hours
Kalb et al., 2015 (Australia)	Included			Male and Female physicians	Difference in wage elasticities
Broadway et al., 2016 (Australia)	Included				Hours supplied and choice of sector

Dependent variables included hours worked, speciality choice, voluntary turnover and hours supplied, depending upon the context and available data set, while independent variable have been chosen from both the categories of economic and non-economic factors.

From the above discussion, it can be inferred that the literature has been biased towards the studies on nurses' behaviour on workplace both in terms of economic and non-economic variables, while the number of studies are comparatively lesser for physicians. Theoretical literature has pointed different structure and related peculiarities of physicians' labour market from nurses' labour market, in terms of pecuniary and non-pecuniary factors. Cost of education, course of specialisation, demand schedule, gender, region and availability of required data on pecuniary aspects are quite different for both the health personnel. Therefore, it can be argued that exclusive studies are required to analyse the characteristics of physicians' labour market.

2.4 Studies on Physicians in Indian Context

Firstly, most of the studies in Indian context are merged within the disciplinary boundaries of Health Economics and Health Care Economics, conducted by demographers, epidemiologists and scholars from the field of community medicine. Demographic studies are concerned with health status of the population across the different states and regions of India and also the concept of access to health care services by different groups within the population. Epidemiologists have been concerned with the disease profile, epidemiological transition of population, pattern of morbidity etc. Utilisation of health services while conceptualising the "access" have been a predominant aspect in these studies (Say & Raine, 2007). Using the data sources of NSSO and NFHS, demographers and health economists have mostly relied upon the household variables in determining the health and access to health services of population (Sood & Nagla, 1994).

Secondly, literary articles described the preference and utilisation pattern of patient from the viewpoint of public or privately practicing physicians. Through this, they tried to show the impact of these factors on cost and quality of health care services in India (Uplekar, 2000). Empirical studies have conducted to show the utilisation of services from private doctors on the basis of NSSO data set. Extensive studies are done to report the working of physicians in private sector or their preferences to work in urban areas which led to uneven and highly skewed distribution across the region. Generally, backward and larger states from Central and Northern parts like Uttar Pradesh, Bihar, Madhya Pradesh, Chhattisgarh,

Jharkhand etc. with their poor health status of population, have low density and highly uneven distribution of physicians across the rural and urban regions (Rao et al, 2011). WHO along with the government reports from MHRD (2012) have mentioned about the scarcity of HRH and their uneven distribution which has been always a major impediment in achieving the goals of universal health coverage. As per the HLEG report (2011), on health in India, most of northern states are suffering from low density of doctors, especially in underserved regions. Reluctance of government doctors to serve in rural areas has been a concern for Indian policy makers. World Bank in a study conducted in 2003 on Indian doctors, revealed about the gross absenteeism at PHCs in rural areas, which amounted for more than 45% (WB, 2003). These studies indicate that emergence of private practices among physicians, are the outcome of demand and supply in these regions. Also, this might be due to the reluctance of publicly employed doctors in providing their services in rural areas (Bhatt, 1999).

Researches pertaining to analysis of labour market for health personnel are scarce in case of LDCs and LMICs. In Indian case, as mentioned earlier, most of the studies are concerned with the conceptualisation of access in health care by different sections of the society. Health economists were more or less concerned with estimating the aggregate demand of health workers in a particular region by using doctor population ratio (density of doctor in a given region), accessibility of population to health services in terms of economic and non-economic factors. Literature of the late twenties (most probably after 2000) has started providing some contextual evidences for the factors responsible for health personnel's job choices. Interestingly, international migration of doctors from India has always dominated the literature when there is a discussion for the physician's' availability in India as a whole. Studies have suffered from the regional biasness, while analysing the explicit case of physicians in some prominent states of India, for example, Uttar Pradesh. While searching for this kind of literature, we find very few studies that address the imperfections in physicians' labour market. Further, studies which explicitly deal with allopathic physicians and their labour market characteristics are quite sparse and that too is not available for all states including Uttar Pradesh. In a qualitative study on thirty seven medical practitioners in Chhattisgarh by Sheikh et al (2012), factors effecting the decision of doctors to stay in rural areas have been explored using in-depth interviews and applying the framework approach.[11]

[11] Framework analysis is basically conducted for policy research using qualitative method. It is application based analytical framework, which uses a priori issues, have defined time frame and addresses specific questions. In accordance with pre-determined theme and issues, data is classified and charted using steps like

Ramani et al., (2013) have conducted a qualitative study with some medical students and health workers in Uttarakhand and Andhra Pradesh, primarily to analyse the strategies for rural retention. Ramani et al (2013) pointed out that studies projecting the contextual evidences for job choices or remaining at a geographical location has largely been missing from the health labour market literature in India.

On the other hand, qualitative studies on medical education in India have existed because of the policy considerations and also interlinked it with the supply of physicians. Public-Private dichotomy in provision of medical education has been studied in some detail to bring out the loopholes in Indian Medical education system. Diwan et al (2013) in their study compared the personal motivations and job aspirations of first year medical students from public and private medical colleges in Madhya Pradesh. They found that reasons for entering into medical education were more or less similar and so were the preferences to work in rural/urban settings for the students from public and private colleges. Most of them had almost similar personal aspirations, parental desire, social prestige and preference for working in urban areas. No significant difference was observed for career aspirations between students of private and public medical institutions.

It has to be seen that educational market for a medical student and a health personnel are quite different theoretically and empirically as well. Further, incentive for motivating an auxiliary staff like nurse to serve in rural area might be different from the motivation of a physician. Nonetheless pecuniary and non-pecuniary aspects are important for both the categories of health worker, but their dynamics and prevalence may differ considerably.

Chopra et al (2008) in their analytical review pointed out that LMICs lack substantive and synthesised research for assessing the impact of various policy interventions for HRH. This is despite of the fact that maximum proportion of health expenditure is incurred upon deployment of HRH in these countries and asserting their importance in achieving MDGs and regional health targets time and again (Chopra et al., 2008). Also, it has been pronounced in many of the literature surveys which were done specifically for LMICs and their labour market for health, that whatever dossier of research existed in this aspect are confined to high-income countries (HICs).This does not find suitable applicability for LMICs and other LDCs. Research gap is observed in addressing questions like- Would medical graduates from underserved areas prefer to serve in these areas after entering into the job market? How the cost-effectiveness of delivering health care could be compared among different cadre of

indexing, familiarising, mapping followed by final interpretation. It is better suited tool for analysis the incidence point of any policy intervention (For detail, see Ritchie & Spencer, 1994).

HRH? What are the reasons for unexpected outcomes for wage and other compensation schemes for HRH? Moreover, institutional constraints, management and governance at different levels need to be analysed especially for the countries like India, where these variables have a marked effect on recruitment and retention of HRH. Earlier Dussault & Franceschini (2006) have mentioned in their paper that pecuniary and non-pecuniary incentives did not find any methodological description in studies conducted on labour market for health workers, especially for East and South Asian Countries. They mentioned about the paucity of studies for developing countries, out of which only a few are related to piecemeal interventions in terms of production of HRH and regulatory interventions (Dussault & Franceschini, 2006).

Chapter Three:
Conception of Theoretical Framework

Chapter Three: Conception of Theoretical Framework

3.1 Introduction

In the previous chapter of literature review, it has been marked that not many studies are available which analyse the labour market for physicians. Specifically, the scarcity of literature is more pronounced for Indian labour market for health professionals in terms of its theorisation and empiricisation as well. This is despite of the fact that physicians play an indispensable role in ensuring the care to consumers of health services.

Health worker is considered as an input in the production of health care services along with the other components like equipments, medicines, infrastructure etc. As an important and central input for the production of health care, government as well as private hospitals including patients demand for their services. Here the important point is, how the demand for any health worker is being created in a health care system. This further depends upon the willingness and ability to pay for the services by the respective consumer. Among the different category of health workers, significance of physicians (both generalists and specialists as well) have drawn greater attention from the government policy makers, academics and other independent health related organisations. Physicians deliver their services either through public sector establishments or through privately owned institutions or in many cases at individual basis, better known as private practice. It has been argued and also empirically established that most of the developing and underdeveloped countries have been facing shortages of doctors while realising various health related goals (either it is attaining of UHC or goals covered under MDGs or upcoming SDGs). Underproduction of doctors is not the only problem which impacts their labour market, but in fact many other interrelated factors accentuate their scarcity as well as their distribution in a particular region. Ranging from the domain of macro level to micro level variables, the dynamics of physicians' labour market is quite different from the conventional labour market framework. This study does not aim to get into the productivity and performance of the physicians, but it attempts to explore the supply side aspects in terms of various pecuniary and non-pecuniary factors in specific context of rural and urban settings in one of the Indian states. It has been already discussed that most of the policy formulations for health worker availability follow the need based approach which *inter alia* endorses for training of more health workers. Need

based approach use estimation of heath workers as per the required need of the population (WB, 2013).

This approach is useful while comprehending the effective demand of health workers but as far as effective policy formulation for ensuring their supply in a particular setting is concerned, this may provide a lopsided view. In this regard, the labour market conditions of health worker require both theoretical as well as empirical overhauling while using the insight from the labour economics. However, the modelling of high skilled health worker like physicians on the line of conventional economic theory of labour market is not easy or so simple either. Physicians' labour market has its own complexities in terms of its specific character which will be discussed in succeeding sections.

In terms of providing employment to health professionals, the credentials of labour market prove to be important determinant along with the medical education sector, which provide the prerequisite degree or qualification to enter in to the labour market. The health needs of a population deserve attention in a different manner, which depends upon the employed health professionals in a given point of time. Ultimately the demand for physicians is derived from the epidemiological and demographic conditions of population. The supply is determined by the number and availability of physicians and subsequently through the aspect of their governance. The interaction of demand and supply help in determining their wage rate, allowances, working hours (inter alia productivity in some cases), performances, geographical distribution etc. On the other hand, these factors reversibly influence the availability of physicians who are willing to work in a particular setting. The other factors like working conditions, safety, and career opportunities play an important role in motivating the physicians or other category of health workers to work in a particular setting (Sousa et al., 2013).

LMICs countries have distinct characteristics of their health worker's labour market. This chapter explores the possible theoretical explanation by exploring the tools of demand and supply of physicians. The chapter starts from exploring the human capital theory and its interlinkage with labour market. This is because the highly skilled labour like physicians can be situated within the broader theoretical framework of human capital. The Indian labour market for physicians will be explored after getting insights from the human capital framework and its interaction with labour market.

3.2 Human Capital Theory and Interlinkages with Labour Market

There is an established linkage between human capital and its corresponding labour market. Literature in Economics and also in other disciplines has acknowledged this association at different levels of their theorisation and empirics. This factor has been recognised in all kinds of education market and types of skills with their corresponding labour force and health care is no exception to that. The interaction between the education system (education market) and health system (health care market) is mediated by the labour market for health workers (Mcpake et al, 2015).

Education, as a vector for human capital, plays a central role in preparing individuals to enter the labour force, as well as equipping them with the skills to engage in lifelong learning experiences. There are, however, numerous dimensions of education– labour market linkages. The most emphatic one is standard human capital model which is based on the assumption that through the optimal level of education, an individual tries to equalise marginal cost and marginal return (Becker 1964). However, it has been a complex econometric process to estimate the returns through the labour and education market linkage, but still remains the most widely used approach to determine the benefits that an individual gets out of investing in education. A good deal of empirical literature exists which has established the value of investing in education for developing the human capital and its subsequent contribution in economic growth and development (see, for example, Hanushek and Kimko 2000; Krueger and Lindahl 2000; Hanushek and Woessmann 2007). The skills earned through education also provide the benefits of life long learning experiences to the individual. Further, the non-economic benefits of investing in education has been stressed upon, such as better health status, social recognition, awareness, contribution to social and community development and thus enhancement of overall well-being (Case 2001). It has been speculated that although non-measurable, but these social return may turn to be higher in comparison to private returns (Currie and Moretti 2003). Therefore it becomes central to explore the human capital approach to investigate the high skilled trained manpower of physicians when it comes to study the functioning of their labour market. Before investigating those linkages, it will be important to look into the some of the debates and theoretical intricacies associated with human capital framework.

The human capital approach was enthusiastically and sometimes uncritically received attention from educators. It also received attention by a growing body of applied microeconomic theorists to whom it offered a fertile ground for statistical inferences

embodying the regression techniques with which they were highly comfortable. Of equal significance was, through this new approach of labour economics, previously regarded by them as a "less respectable" institutional field, could now be brought back into the framework of microeconomic theory. This incorporation provided the ground for linking the theories of occupational choice, on the job training and selection criteria within the neo-classical formulation. A new but loosely termed segment named as the "Economics of Human Resources" have emerged out of the economics of education, discrimination, poverty, family etc. This became possible because of the active role played by the framework of human capital for incorporating these constructs into the applied branch of microeconomics. The old domain of 'institutional economics' transformed into the 'New Labour Economics' (Sobel,1982). Labour Economics has standardised the human capital in terms of worker's productivity which was due to level of skill in that worker.

Skills and knowledge about a particular profession like medicine generate the stock of productive capital. Through the human capital approach, the value of this productive capital gets its derivation from the earning potential in the corresponding labour market. After entering into labour market, physicians get on the job training experiences, other formal training programmes, which further increase their value in the market for health care services. But again, the challenge remains for behavioural theory to explain as why people faced with similar circumstances opt for different choices and also show different performance levels in different settings. In this case, the human capital approach may not provide the suitable explanation.

Human capital investment model is based on assumption that individuals tend to maximise their utility and consider lifetime perspective while deciding about training and education. This straightforward theory of human capital provides many interesting insights about the earning behaviour of workers. It can tell whether to attend a college or not, whether to go for specific on the job training or general training, whether to go for job turnover, and also to move from one destination to other (occupational mobility both internal and external as well). However recent studies have pointed the importance of non-economic factors like family, friends, and social reputation in deciding the educational choices of an individual. In this regard, exposition of Tapas Majumdar suits well, whereby he argued that different domains play the role in collective choice formulation of an individual (Majumdar, 1983). This seems to be true in case of physicians' preference to work in a particular setting. The earning factor gets to be pushed back, and other behavioural factors come into the forefront. Instead of earning differentials, as predicted by human capital theory, the case which emerges

here is, about living conditions and living standard differentials. The labour market peculiarities of physicians which will be discussed in succeeding sections, will throw light on that.

3.2.1 A Critical Note on Human Capital

Bowles and Gintis (1975) provided the Marxian critique of human capital in their article '*The Problem with Human Capital Theory'*. They based their arguments on four major points- firstly, the process of production of human capital is a social and technical process, second, production of human capital is always joint production with raw materials, labour of workers and the skill and consciousness of workers, third, labour in the production process of human capital for a human being is not a process of production commodity in the market but rather it is a process of production of an active agent or human being and fourth, the structure of wage rate is determined by the firm in such a way to maximise firm's profit. They argued that neo-classical economists treated labour as commodity as they put it " the theory of Human Capital offers no theory of reproduction at all and presents a very partial theory of production one which abstracts from the social relations, of favour in production of technical relations" (Bowles & Gintis, 1975, p. 75).

Attacks on human capital approach are based on its roots in neo-classical framework. Arguments basically revolve around that human capital framework treats human being as commodity. Further, the emergence of screening hypothesis theorised education as screening or filtering device while entering into the job market. On the other hand, Sen's capability approach[1] relates education to the capability of human being.

In addition to screening hypothesis and capability approach, the introduction of sociological dimension to the field of Economics has challenged the assumptions and methodology of neo-classical framework (Block, 1990). Economic sociology posed questions by arguing that, culture and society are indispensible element of an economy. They play a significant role in shaping the preferences and collective decision making process of an

[1] The human capital approach to education differs significantly from the human capabilities approach because it focuses on the creation of productive agents (Sen, 1999). As a result, it measures the value of education in terms of the generation of aggregate resources and personal resources, including the ability to escape resource deprivation. Sen distinguishes between commodities, human functioning/ capability and utility as follows: Commodity →Capability (to function)→ Function(ing)→Utility (e.g. happiness). Capability approach questions human capital because of its interpretation of education as a means to create human capital is also impoverished because it evaluates education solely in terms of the accumulation of resources. (Human Capabilities Versus Human Capital: Guaging The Value Of Education In Developing Countries, Social Indicators Research (2006) 78: 287–304 by simon wigley and arzu akkoyunlu-wigley) Also see The Capability Approach: Its Development, Critiques and Recent Advances by David Clark (2005) in WP-32, Economic and Social Research Council, UK).

individual. This aspect had been already pointed by Tapas Majumdar in 1983, whereby he argued that economic logic is not the only factor accountable for decision making process of an individual, but social (family members and society) and institutional factors play a significant role. Methodological individualism mostly used by neo-classicals, rendered obscurity to socio-cultural, institutional and political determinants of economic action.

Revival of institutional economics after 1970s, have questioned the concepts of human capital theory. Block (1990) argued that axiom of rational utility maximisation, a position on which much of the classical economics rest, is in fact, a consequence of social arrangement.

Questions were also raised from the behavioural perspectives, which have its roots in psychology. Behavioural approach tends to attack the basic premise of rationality of human being while making economic or social decisions. Premises of behavioural economics follow different or precisely inverse route from the classical *homo economicus*, who is considered self-interested and rational economic agent (Ebmer, 2014). Gary Becker has put it in different manner by analysing motivation with non-economic variables as he says "… the economic approach I refer to does not assume that individuals are motivated solely by selfishness or material gain. It is a method of analysis, not an assumption about particular motivations. Along with others, I have tried to pry economists away from narrow assumptions about self interest. Behaviour is driven by a much richer set of values and preferences" (Becker, 1993, p. 385). Behavioural labour economists have made important contributions by modelling the decision of an individual through different circumstances subject to reaction to the policies. Dohmen (2014) argued that introduction of behavioural economics to conventional domain of neo-classical theory of labour market have in fact provided important insight to not only the wages and job characteristics but to the attributes like motivation and incentives, social preferences, family and social life, technical change, prestige, career upgradation, risk preferences etc.

3.2.2 The Empirical Anomalies in Human Capital Approach

A number of empirical anomalies and failure of policies predicated upon human capital theory are cited[2] in research literature. It has been argued that investment in primary

[2] Many of these anomalies and falsifications, are cited in Glenn Cain's superb review article, "On Segmented Labour Market Theories," Journal of Economic Literature (December 1976). Cain, however, still opts for the human capital approach. An equally cogent article of this genre is that of Daniel Hamermesh, "Potential

education did not lead to the desired outcome of growth in productivity, both for underdeveloped and developed countries as well. Furthermore the explanation for earning differentials as provided by human capital theory, have not found to be very effective over a time period, especially for westernised countries. Poverty and unemployment could not be eliminated with the help of investment in higher education. Discrimination in labour market has persisted despite of the equal training programmes in same organisation. The experiences and longitudinal data sets regarding the earnings and employment profiles of women and black in different settings can be cited as an example of this. This has challenged the neo-classical empiricisation by pointing that with the same education and training, the productivity differentials may vary and thus give rise to wage differential (Sobel,1982).

The root for these empirical anomalies actually lies in its two core paradigms that is, methodological individualism and rational choice theory (RCT). Empirical findings suggest that individual's decision to invest in various education or career choices is constrained by various institutional and social factors and also across different space and time (Tan, 2014).

Further, the conventional estimate undermines the contribution of "ability" as a factor to the higher earnings of any individual. People who are smarter, hard working or more dynamic in nature may show more productivity even after lesser number of schooling years in comparison to those who have more schooling. This results in higher wages for the former despite of lower level of education (Ehrenberg & Smith, 2012).

Further criticism of human capital theory concerns a more technical problem with criticisms about the employment of the theory as a means of accounting for national economic growth. This criticism comes from Blaug (1987) who contended, "it has to be said that the models so far examined in the growth accounting literature fail utterly to explain the mechanism by which this effect is produced". The contention that economic growth emanates from education is a non-sequitur because, while it may be granted that education contributes to growth, so do many other activities. Blaug (1987) argued that what must be illustrated is "not that education contributes to growth, but that more education would contribute more to growth at the margin than more health, more housing, more roads, etc."

Summarising from the above discussion, it can be said that dissatisfaction with the human capital approach is manifested in three ways. Firstly, expectation from massive

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Problems in Human Capital Theory," Proceedings of the 26th Annual Winter Meeting (Madison, Wisconsin: IRRA, 1973).

investment is not realised as per the prediction of the theory which soon led to a reaction against the theory itself.[3]

Second, empirical results were not in much favour to the theoretical generalisations, which led to the questioning of many of its assumptions.

Third, a fundamental attack was made upon the basic premises underlying the investment in man approach, and these were linked to the increasingly more sophisticated structural or institutional theories of the labour market.

3.3 Labour Market

Prior to World War II and till 1970s, the labour market was generally considered as an offshoot to the neo-classical labour economics. The reasons were rooted into the premises of neo-classical school of thought which rested upon to major assumptions viz., rationality of human beings and utility maximisation, given the economic constraints. Neoclassical economics has in fact dominated the economic discussion during late nineteenth century, which was basically a response to the tenets of classical school of thought headed by Ricardo and Mill. Both the schools were not very different in terms of their basic assumptions, but they differed mainly on the issues being addressed. Classicals were more inclined towards economic growth, while neo-classicals were concerned about issues of prices and allocation of resources in economy (Stigler, 1969). The methodological individualism of the classical school of thought considered individual as an economic agent which was replaced as a sociological agent in neo-classical domain. Furthermore, the incorporation of institutional economics into the neo-classical thinking, especially in US[4], has influenced many of its policy related research. “Institutionalist labour economics” is more concerned with the labour itself rather than it as a commodity for producing other goods, as earlier envisaged by neo-classical school of thought. The methodology of institutionalist labour economics therefore, is more of inductive in nature and uses case study approach to fact based measures. The data

[3] As per Sobel (1982) these disappointments were most observable in developing countries.

[4] Institutionalism although grew in US along with the development of neoclassical economics during 1890s, but origin of former is traced in German school of Economics as some of its founders, such as Richard Ely, had been trained in Germany. Ely described the economics that was taught in American universities in the 1870s and 1880s as "dry bones"—focusing entirely on "natural economic laws" and laissez faire, and seeing people as simply "instruments by which wealth is created and not the end for which it exists" (Stigler,1969). Later on, John R. Commons, a pupil of Ely turned University of Wisconsin in Madison as a centre of institutionalist research, that is, of rigorous study of the evolution and practicing of various economic organizations" (Yonay 1998). In 1905, two of Commons's colleagues at Wisconsin, Thomas Adams and Helen Sumner, published a textbook entitled ‘Labour Problems’, which typified the institutionalist approach to labour economics.

such gathered is used to provide a differentiation between 'descriptive economics' and 'economic theory'. Before World War II, neo-classical approach of labour economics took the hold by harbouring the concepts of labour demand, marginal productivity, supply of labour, competition and problems with governmental regulation. But after the World War II and economic depression of 1930s, the role of market forces for bringing equilibrium into economy was being questioned and so the fundamentals of neo-classical labour economics. But again in the early 1970s, it revived with substantially more sophisticated philosophical underpinnings along with concrete empirical overhauling. The contributions of Gary Becker, Jacob Mincer, Schultz etc. have provided different models of analysis to the job market in the form of human capital framework and labour market discrimination. Interest in public policy debates has led neo-classical labour economists to incorporate some changes. Firstly, they inclined towards the institutional details because of its significant relations with public policy issues. Second, rising interest in public policy domain required labour economists to analyse for those people who are not very well off with the use of economic jargons, complex models and mathematical equations. For example, many of the economic reports in the area of labour market demanded non-technical treatment of concepts like compensating wage differential, supply choice of labour, shift in labour demand and supply and further explanations of growing wage inequality. The later is in fact, more pronounced in case of LMICs and developing countries (Boyer & Smith, 2001).

Therefore it can be argued that neo-classical approach provides the skeletal framework for analysis of labour market and many of its modifications. Although many of the markets and labour supply behaviour can not be explained alone with the assumptions and methodologies of neo-classical labour market (as also noticed in the case of physicians' supply behaviour), still the neo-classical is the dominant paradigm to explain the basic behaviour. Therefore it will be important to put forth a brief discussion about general assumptions and functioning of labour market before moving onto the specific case of supply of physicians' services.

Labour economics primarily concerns itself with behaviour of employers and employees in response to wages, prices, profits and non-pecuniary aspects. These incentive work as factors to either contain or motivate an individual to provide his or her services and also the employer's hiring process. The general market of labour operates through demand for the labour services and its supply. The interaction among wage, decision to work and general characteristics of labour market helps in determining the supply and demand for

labour. On the other hand, through same variables, the educational and occupational choices and mobility between different job markets are analysed. The basic assumptions of positive economics are applied to the analysis of behaviour of individuals in labour market. These include rationality of individual whereby he pursues the objective of utility maximisation given the scarcity of resources. Here the utility of employee is generated by both pecuniary and non-pecuniary dimensions of that employment. The assumption of rationality implies consistency in response to general economic incentives and also the adaptability of behaviour when those incentives change.[5] It has been argued that assumptions are meant to simplify the inconceivably complex behaviour of actual functioning of labour market, as it is difficult to analyse the each and every workers' motivation to work in a particular employment setting. The labour market in general is not a single entity, however for the sake of convenience in analysis it can be divided into various segments. The most common among all are geographical and occupational segregation.

3.3.1 The Demand for Labour

Primarily, the demand for labour is derived demand as it depends upon marginal productivity of labour (henceforth MP_L) and market value or price of the product. A firm is more concerned with the revenues that a particular labour generates and not much with the physical productivity of labour. In case of homogeneous labour, demand is more or less appears to be inelastic. As Hamermesh (1986) explained that the price elasticity of demand declines with the increasing education embodied in a worker. The demand for labour is generally more elastic if, the greater the elasticity of product demand and the larger is the labour cost to total cost. Empirically it has been found that demand for skilled labour is less elastic than the unskilled one (Smith, 2003). Further, the market demand curve is different from the individual demand curve in terms of elasticity. It is observed that as price changes, the proportionate change is more for market demand than the change in individual demand schedule.

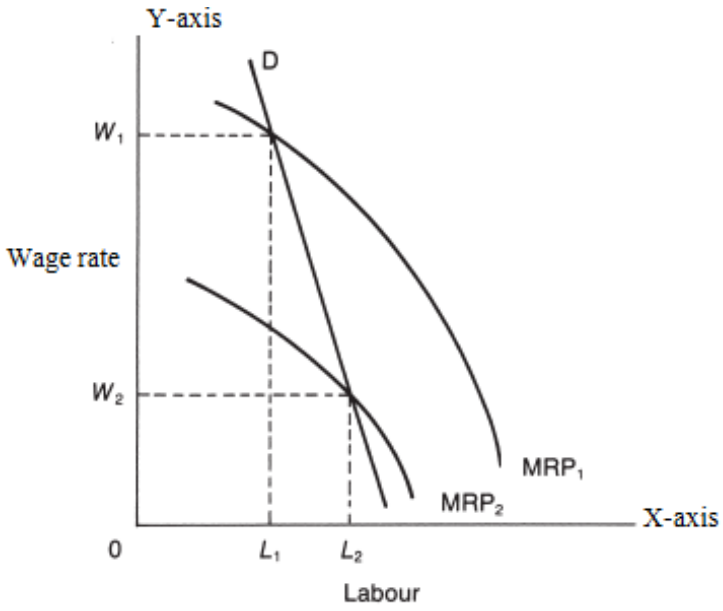
To understand the guiding concept, the total physical productivity of labour (TPP_L) and both the averages that is, Average physical productivity (APP_L) and marginal physical productivity (MPP_L) of labour are required. Whereas-

[5] For articles on rationality and the related issue of preferences, see Gary Becker's piece "Irrational Behaviour and Economic Theory" in Journal of Political Economy, 1962. Also articles of Richard H. Thaler, "From Homo Economicus to Homo Sapiens in Journal of Economic Perspectives (Winter 2000) and Stefano DellaVigna's "Psychology and Economics: Evidence from the Field which appeared in Journal of Economic Literature in June 2009 can be consulted.

$APP_L = TPP_{L} \div L$

$MPP_L = \delta TPP_{L} \div \delta L$

Diagram 3.1: Labour Demand Curve and MRP



Suppose employment and output increase, the price of output will fall into the market as shown in the diagram 3.1 with the help of MRP of labour. This lead to fall in wage rate from W_1 to W_2, and the MRP curve shifts down and employment increases from L_1 to L_2. This diagram is to show that wages are related to the marginal productivity of labour, which determines the demand schedule for that particular labour. Therefore within a single industry or within a firm itself the demand for different labour may vary as per the MP of labour in the long run.

MRP = MPP × MR

Where, MPP is marginal physical product and MR is the marginal revenue.

Under the perfect market conditions the demand curve for a product facing an individual firm is perfectly elastic and therefore P= MR. But in imperfect competition, this is not the case. The shape and slope of MR and AR curve will depend upon the type of market viz., monopoly, oligopoly etc. For example, P is higher than MR under monopoly or monopolistic competition therefore value of marginal product (VMP) will be greater than the MRP. Here the, VMP= MPP×P or AR. So, in perfect competition MRP and VMP have identical meanings but they diverge in imperfect market conditions. Under perfect competition a factor

of production like, the labour, will get remuneration equal to the value of its marginal product.

Aggregate labour demand is dependent upon both the product demand and wages. The influence of wages and product demand on employers' demand for labour is theoretically well founded and therefore both variables feature prominently in empirical studies of labour demand. According to neo-classical theory of pricing of factors of production, it is primarily the forces of demand for and supply of factors which determine their prices.

3.3.2 Supply of Labour

Labour supply has gained more importance in labour economics, which is further dominated by neo-classical theory and a lot of empiricisation. Although various important policy aspects of labour supply still require attention which ranges across the concern for demographic changes, geographical setting of different types of labour in terms of their skill based hierarchy. Theoretically, the supply of labour are analysed at two levels that is, the microeconomic level and at aggregate level. At the micro-economic level, an individual's labour supply decision is analysed by involving the model for the choice between work and leisure subject to income constraint. In this theorisation of labour supply, the model is not concerned with any particular individual instead, it proposes for an 'axiomatic' and idealised microeconomic individual who primarily seeks to maximise the utility. On the basis of utility maximisation, an individual first decides as to participate in labour market and then choose for hours to devote in work. In a very basic model, this can be represented as below-

Labour supply H (hours of work or labour market participation rate) can be-

$H = T-L$

$H = (T-L) = f(W, V, Z, S)$----------(1)

whereas,

T= total time available, L= Leisure hours, W= wage rate, V= non-labour income,

Z= non-pecuniary job characteristics, S= socio-demographic and individual work characteristics.

The specification can be derived assuming the utility function –

$U = u(C_t, L_t, X_t)$----------(2)

C_t = composite consumer goods, L_t = leisure hours and X_t individual attributes in a period t.

Labour maximises his utility given the budget constraint

$C_t + W_t L_t = V_t + W_t T$ ----------(3)

$Y = U(C_t, L_t, X_t) - \lambda \{C_t - V_t - W_t (T-L_t)\}$ ----------(4)

$U_c\ (C_t, L_t, X_t) = \lambda$

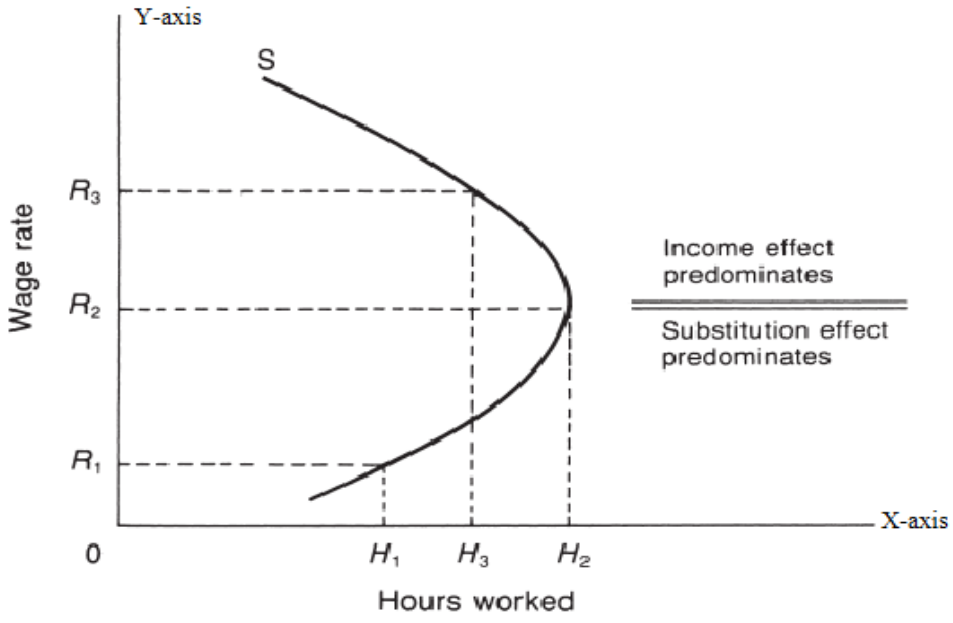
$U_L\ (C_t, L_t, X_t) \geq \lambda W_t$ or

$U_L / U_c \geq W_t$

While deciding whether to enter into a particular kind of labour market, the individual considers whether the increased possibilities resulting from working are sufficiently attractive to compensate for the forgone leisure or other working facilities. At the optimal level of consumption and leisure, marginal utility of leisure divided by marginal utility of consumption equals the wage rate, as provided in Equation (4). With utility held constant, the relationship between worker's wage rate and hours of work is ambiguous, depending upon the domination of either substitution or income effect.

The individual labour supply curve (S) may be backward bending as shown in diagram 3.2, a feature which leaves open the question about whether greater remuneration results in increased work effort. As the wage rate rises from lower to higher level, the individual offers to work longer hours, i.e., he/she substitutes extra hours of work for leisure, hence the term 'substitution effect'. Yet the increasing individual's income also increases the demand for goods including leisure, hence the term 'income effect'. The substitution effect tends towards more work whilst the income effect tends towards more leisure. Both are occurring simultaneously throughout the length of the whole supply curve. Which one is the predominant effect determines the shape of the curve at any particular wage rate.

Diagram 3.2: Backward Bending Labour Supply Curve



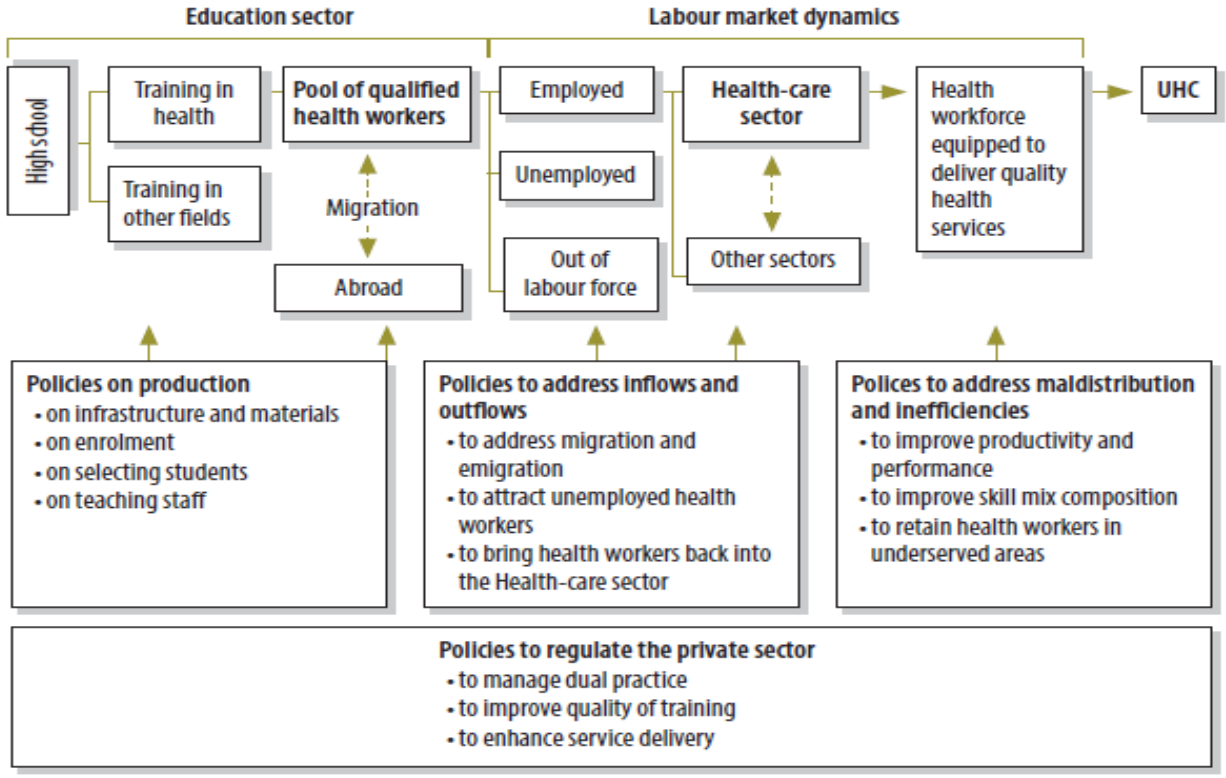
Extent of availability of non-work income influences the willingness of the labour force to work. When dealing with labour supply at the total economy level, economics views the supply of labour as the aggregation of all individual supply decisions. On the other hand, an individual's decision to participate in labour force depends upon various other factors. They can be economic circumstances, personal characteristics like age, sex, family background etc., government legislation, general health, morbidity of the individual, other social customs.

The very basic assumption of frictionless labour market functioning is about the flexibility of price and wages in response to changing market conditions. Another basic element of the analysis of wages in labour economics is the notion, that wages must reflect the nature of the job. Jobs, which have different characteristics, must have different wages to account for those differences to compensate the nature of jobs. It may be possible that one job requires more education than another and offers higher wages to entice more educated workers and to compensate them for the time, effort and expense of undergoing more education. Compensating wage differentials incorporates the workers' assessment of non-wage aspects of a job, such as safety, working environment and job security as determinants of labour supply (Smith, 2003). While understanding the issue of health worker shortages and their availability as per the context, an economic approach to labour market is fundamental. The next section will look into labour market for physicians which can be categorised as high skilled labour and its own dynamics in terms of its demand and supply.

3.3.3 Labour Market for Physicians: A Case of High Skilled Labour

The application of labour economics to the analysis of health workers' labour market is often different from the application of principles of conventional neo-classical labour economics as described in previous section. Figure 3.1 presents a general relation between education market of health professionals and their labour market. The framework is defined and adopted by WHO for comprehending the interrelation between these two sectors and also for formulating the policy measures to ensure UHC to the population. Through this figure, many of the variables can be observed which make the labour market of physicians a distinct case from the usual assumptions of neo-classical labour market. The reasons are accredited to the different set of institutional and policy related issues which eventually direct the theoretical and empirical research in the health care labour markets.

Figure 3.1 : Health labour market framework for attaining universal health coverage (UHC)



Note: The supply of health workers is made up of the pool of qualified health workers willing to work in the health-care sector. The demand for health workers is represented by the public and private institutions that constitute the health-care sector.

Source: Adopted from Sousa et al (2013)

This is not to infer that labour economics could not be applied to the health sector. In fact, labour and health economics share basic set of models, micro-econometric empirical methods and tools to analyze labour market issues (Mcpake et al, 2014). Before analysing the application of basic assumptions of labour market to the physicians' labour market, it would be important to discuss some of the basic characteristics of physicians' labour market. A large share of medical care expenditure by patient and also by the government is incurred upon physicians' services. They remain in the position of decision making entity while deciding about the quality and quantity of health care services. Additionally, they hold the power to bargain about their fees from the patient and also from the employing agency and insurance carriers. It also depends upon the consumer of the medical services and also the agency with whom they work. The reputation and demand for a particular physician play an important role in influencing their bargaining power for wages or fees. However, physicians

have the unique position for effecting both the price and utilisation of services (the two major components of medical care expenditures). While there has been an extensive line of research regarding hospitals' ability to leverage their market power into higher fees (Campos & Albuquerque, 2005), there has been very little empirical research regarding physicians' bargaining power. Specifically, the incentives of physicians to affect their own revenue by shifting services provided to patients are distinct from hospitals because hospitals are usually paid on the disease basis. Since physicians are usually paid on a fee-for-service basis, earning additional revenue for every procedure performed, therefore their incentives may be aligned to respond to price changes by shifting the utilization of services.

Primarily, the specific characteristic of physicians' labour market is their institutional organisation. The peculiar economic properties has shaped their labour market in a different manner and thus often leading to emergence of varied market structures. However, "market failure" is the widely discussed phenomenon in case of health worker's market structure. That is, the operation of market forces alone is not sufficient for the working of this sector, as recognized in various research (WDR, 1993). Perhaps one of the most often perceived differences in the sector is the lack of consumers' ability to choose their own basket of goods and services due to their lack of information for decision-making. It is useless to ask a patient whether he/she would prefer chemotherapy instead of radiotherapy in case he/she is able to afford only one of the alternatives. By the same logic, it would be difficult to decide for a patient to either go for an immunological examination or MRI. Patient has to opt for different alternatives until the disease is diagnosed or cured. This aspect contradicts the theory of optimal resource allocation in the given market because of asymmetric information. One side – the service provider – supposedly holds the information by accumulating esoteric knowledge (Campos & Albuquerque, 2008).

Second important aspect is related with the demand for health care given the institutional structure of physicians' labour market and other important characteristics of the population (Arrow, 1971). This makes the demand for their services unpredictable and irregular, which may not be the case for other commodities like food, clothes, luxuries etc.

Third, behaviour of physicians can not be judged in advance, neither his quality of care. This is due to the similar identification of 'product' and 'process' by the physician. In this case, service or the commodity can not be tested before the consumption. Moreover, the element of trust is the most important part while forging the deal between consumer and producer of the service. In Talcott Parsons' terms, there is a 'collectivity-orientation', which

distinguishes medicine and other professions from business, where self-interest on the part of participants is the accepted norm".[6]

Fourth, the supply conditions are not determined because market entry of health workers especially physicians is not free. Cost of medical education is very high and there is tough competition to get into the medical colleges. Further, medical graduates need license to practice in the sector. Therefore it contradicts the classical competitive market assumption of full mobility of the production factors (Arrow, 1971).

Fifth, pricing is uncertain which is not an oftenly seen mechanism in economic theory. There is extensive price discrimination according to the patient's income, at one extreme reaching zero cost for indigent patients. Price competition is strongly disapproved (Campos & Albuquerque, 2008). In most markets, concern over large increases in the supply of manpower would focus on expected declines in earnings, difficulties in securing steady employment, and lower prices for consumers. While this describes many labour markets, it does not describe expectations about the market for physicians. Among the various explanations for this discrepancy, is the lack of appropriate consumer information entailing reliance on providers as suppliers of information which is thought to produce interdependence between supply and demand. As a result, it has been suggested that an increased supply of physicians will not lower but rather increase prices and utilization as physicians attempt to maintain levels of income. The mechanisms whereby physicians are hypothesized to be able to increase both fees and volume of services in the presence of an increasing manpower supply, represent a belief in the theory of demand inducement. In a pioneering study on this question, Fuchs and Kramer (1973) used national, aggregate cross-section data to identify supply factors, technological change, and the number of physicians as major determinants of the increase in expenditures for physician services from 1948 through 1968. They not only found the physician-to-population ratio to be important in explaining visits per capita but to be more important than consumer income, price, or insurance coverage. In a later article, Fuchs (1978) attempted to test this notion of physician-induced demand by relating the supply of surgeons to the demand for operations. Again national, aggregate cross-section data were used and again a positive relationship was found between the physician-to-population ratio and the number of operations performed. Cromwell and Mitchell (1986), too, using aggregate cross-sectional data, reported a significant and positive relationship between density of surgeons and elective surgical demand. In addition to these

[6] For this analysis see Neil J. Smelser and T Parsons, Economy and Society, A study in the integration of Economic and Social Theory.

relationships between the physician-to-population ratio and service utilization, studies using both aggregated and dis-aggregated data have reported positive associations between physician density and fees, and particularly between surgeon density and surgical fees.

Earlier, Evans (1974) focused on the theoretical implications of shifts in consumer demand in response to supplier behaviour and reported a positive relation between medical prices and the physician-to-population ratio in some Canadian provinces. On the other hand, in an early study using aggregate time-series data, Feldstein (1970) found no effect between physician density and pricing decisions. Postulating that physicians are able to become increasingly monopolistic as physician density increases because information sharing among consumers is more difficult where there are large numbers of physicians, they expected prices to be higher in physician-dense areas. This is an alternative explanation of the physician density-fee relationship which does not rely upon demand inducement.

Standard economic analysis assumes that the supply and demand schedules in any market are independent. Given an exogenous increase in supply, a new equilibrium is reached by moving down the (constant) demand curve, as shown in Figure 3A. The demand-shift hypothesis asserts that "given an exogenous shift in the supply of physicians from S_1 to S_2, the physicians induce a shift in demand from D_1 to D_2" (see Figure 3B). Let us also assume that physicians derive utility from income and that work (at least beyond some level) is a source of disutility. If the physician/population ratio is relatively high in an area (for reasons unrelated to demand), they may push quantity to the right of Q in order to keep prices and incomes from falling drastically. If there are relatively few physicians in an area, and if they cannot or do not raise price to an equilibrium level, they may push quantity to the left of Q in order to avoid excessive work. This latter situation, sometimes characterized as "excess demand," has been offered as an explanation for the observed correlation between supply and utilization (Fuchs, 1978).

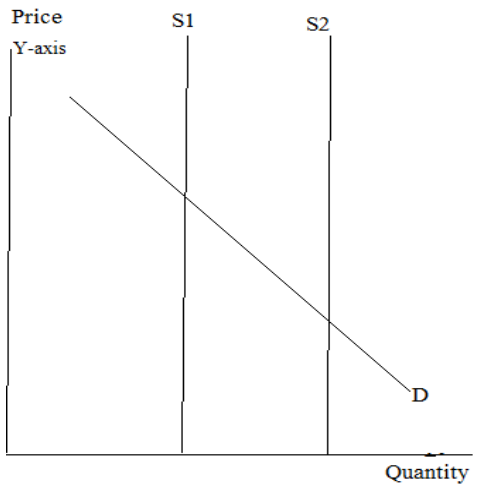


Fig 3A. No Demand Shifting

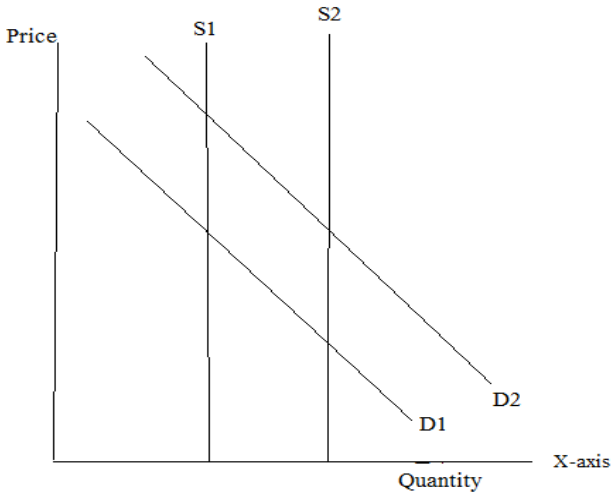


Fig 3B : Demand Shifting

The benefits from increases in the quantity of medical care, either to an individual patient or to a population, can be assumed to increase at a decreasing rate, hence the falling marginal benefit curve MB (Figure 3C). For simplicity, let us assume that the cost of medical care to the patient (financial cost, time costs, risk, etc.) increases at a constant rate, shown by the marginal cost curve MC. If patients had full information and full control over the quantity of care, they would choose quantity Q. The fact that the quantity may be determined by the physician does not in itself imply demand-shifting. The physician, acting as an unbiased agent of the patient, may also choose quantity Q. If, however, the physician chooses and the patient accepts a quantity of care greater than or less than Q, we would say that there has been demand-shifting. Note that demand can be shifted either up (to the right) or down (to the left). Let us assume that, other things equal, physicians prefer to come as close to Q as possible, that is, they derive utility from ordering the amount of care that equates marginal cost and marginal benefit for their patients.

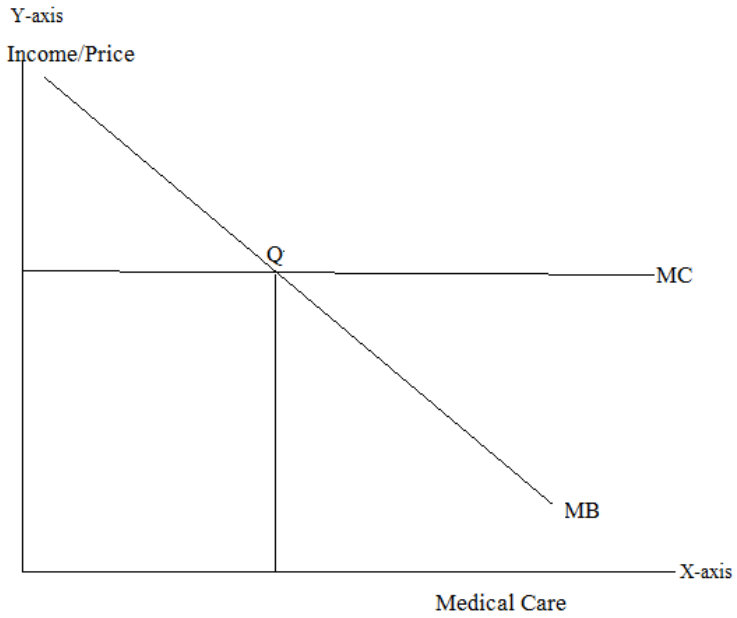


Fig 3C: Alternative Way of Viewing Demand Shifting

Pauly (1978) has suggested that the ability of physicians to shift demand for their services might vary for different groups in the population. In particular, he hypothesized that the effect might be inversely related to the level of education and also for different geographical settings.

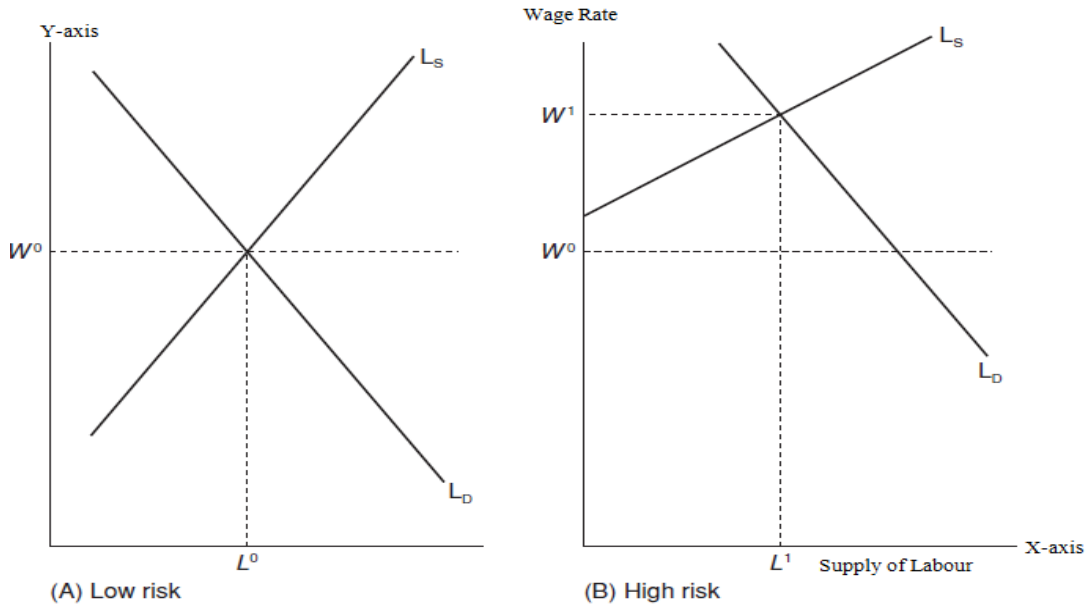
3.3.4 Concept of Compensating Wage Differential and Non-Pecuniary Factors in Labour Supply of Physicians

A compensating wage differential approach highlights the role of the relative advantages and disadvantages of geographical space and other work related conditions. For example, in rural areas there are typically longer working hours, higher levels of being on call, and the need to work in relative professional and social isolation (WB, 2014). Primarily the basic element of the analysis of wage in labour economics is the notion that wage must reflect the nature of the job. Yet workers must be aware of different job characteristics for compensating wage differentials to operate. For example, workers need to be aware that one job is more dangerous than another in order to require a higher wage for the more dangerous job. Compensating wage differentials incorporates the workers' assessment of non-wage aspects of a job, such as safety, working environment and job security as determinants of labour supply.

Diagram 3.4 illustrates the situation in two sections of a perfectly competitive labour market. In the low risk sector (industry or occupation) the forces of supply and demand for

low risk jobs determines an equilibrium wage W^0. However, this cannot be the wage rate prevailing across the labour market, otherwise nobody would do the high-risk jobs. Equilibrium in the high-risk sector is only achieved at the higher wage of W^1. This wage will not tend down towards W_0 by labour suppliers moving out of sector A into sector B because the existing wage differential $W^1 - W^0$ is not great enough to compensate any of the L^0 workers in sector A for the disutility of a higher risk job.

Diagram 3.4: Compensating wage differential in two types of Market



Thus the wage differential will persist (Smith, 2003). The same concept has been applied by some recent studies from World Bank and WHO to the analysis of physicians' labour market in LMICs. The basic argument of the theory of compensating (or equalizing) differences is concerned with how the wage rate in a competitive labour market reflects the advantages and disadvantages of jobs (Rosen, 1986). This may include the location of the job, flexibility of hours, the type of tasks undertaken, and the types of patients seen. For example, the government who is offering jobs that have undesirable characteristics (e.g. working in a remote area or in an area with high costs of living) would need to offer higher wages to attract workers, in order to compensate workers for the undesirable characteristics of the job. Recruiting in urban areas may not have these problems as physicians will be offering their services even at lower wages because of other non-pecuniary characteristics. WB (2014) and other related policy documents proposed for market adjusted wage rate for health workers. Where wages are flexible, there is no need to measure or be concerned with

other non-pecuniary factors associated as these are captured in the market wage rate in efficient labour markets. In this way, the equilibrium market wage captures and reflects all the relative advantages and disadvantages of jobs, again highlighting the central role played by wages in labour economics. However, where wages are regulated and inflexible, they may not fully capture the advantages and disadvantages of jobs (WB, 2014). However it can be argued here, that allowing market to adjust wage rate for all the job characteristics may not be effective for Indian labour market for health professionals especially in case of physicians. A robust empirical observation is required on the basis of robust experimental design to argue this point.

As discussed in the previous section that supply of physician may affect the demand and utilisation of health services in any population and in any particular geographical setting. But in case of decision and motivation to supply health services, only wages and salary are not the only factors. Apart from the monetary benefits, the "psychic income"- much of which consists of non-pecuniary job payments- is quite important. This fact is usually asserted but not substantiated because of lack of data (Duncan, 1976). In case of physicians, the basic skills are almost same for every physician, nonetheless the differences in pay scale arise because of further specialisation and job experiences. However, within a particular group of physicians having the same level of qualification and experience, the difference in their job motivation and decision to supply vary as per the various non-pecuniary variables. A physician may enjoy higher non-pecuniary rewards in urban area as compared to the physician working in rural area. This creates a kind of labour market discrimination by the employee and not by the employer (Duncan, 1976).

3.4. Market for Physicians in India: Peculiarities and Problems in Terms of Theoretical Analysis

The overall health care market and its linkages with labour market for physicians has been complex to analyse as noticed in the previous sections. Indian labour market for physicians is no exception to that and in fact presents a distinct case in various respects. It has been argued that physicians are under-produced and their distribution across the rural and urban areas is heavily skewed. Furthermore, a large number of medical graduates emigrate to wealthier countries (Talati & Pappas, 2006).[7] On the other side, the demand for physicians is quite complex because patients suffer from lack of access to information due to meagre

[7] This aspect of international migration of Indian doctors has been dealt extensively in Chapter Six.

literacy level and therefore, they are at the mercy of the doctors. This is more specifically observed in rural and underserved areas. Lemiere et al (2011) pointed that the low effective demand for health care may arise because of the characteristics of population. It may be due to willingness to pay by the government and individuals.

The lack of knowledge, reliance on quacks and other mode of treatments have been found responsible for creating lower demand in rural India for health services. Therefore, the concept of willingness to pay is important and distinguishes demand from "need." Another important observation is, since wage rates do not reflect consumers' valuation of the services provided, how pay levels are set and regulated is therefore an important part of the institutional design of health worker labour markets (Blau and Kahn 1999; Nickell and Layard 1999) in India. Higher wages are assumed to provide an incentive to work for more hours and to encourage those workers which are not working currently. Empirical evidence suggests that changes in the level of pay influences hours worked and workforce participation. There is also the possibility and some evidence of doctors on relatively high incomes working less, as they prefer to take more leisure time when earnings increase (Mcpake et al, 2014). There is also the possibility of a "backward-bending" labour supply and a negative labour supply elasticity by which an increase in wages causes a fall, rather than an increase, in hours worked. In Indian case, the negative labour supply elasticity is observed because of various other non-pecuniary aspects excluding leisure. Rural India has witnessed this problem when various health planning and policies were formulated for making people aware of their health needs. Perhaps, that might be the reason that Bhore committee has mentioned physicians as 'social doctors'.

Primarily, in health care market, it is the health care provider (physicians) who assesses the patients' problems and needs, and then decides the type and extent of the care required. This creates supplier induced demand as discussed earlier, which not only pushes the poor patient into abject poverty but also into a persistently unwell state of health. This becomes even worse in a health care system where most people pay out of pocket (OOP) for a considerable proportion of their health expenditures (Ahmad &Shaikh, 2009). This kind of case is most prevalent in Indian scenario where OOP expenditure is substantially high (NIPFP, 2012) and it has shown an increasing trend across the recent years (GoI, 2015).

Another reason pertains to non-availability of data for high skill physicians in India, which is required to carry their labour market analysis. Central to any labour market analysis

is an understanding of the absolute and relative levels of health worker remuneration from all sources. This is a very difficult variable to measure in the health sector and doing so requires considerable effort. Pay of health professionals in India consists of multiple components including salaries, informal payments, bonuses and allowances that can vary considerably among health workers as per their service location, though the skills may be at same level. Furthermore, health professionals often hold multiple jobs or generate income outside their primary employment. This is quite rampant practice in urban and rural areas, where there is no such vigilance for abstaining them from these corrupt practices. Observations from field substantiate this observation, whereby it is hard to get the exact information about the pay or gross income of physicians. Availability of more comprehensive data on their pay levels will be important for understanding the dynamics of the health labour market. Perhaps this might be a reason as to why very few studies have been conducted in Indian case for measuring the "elasticity" (responsiveness) of the supply of health workers to changes in the wage rate. For example, Qin et al., (2013) suggested that the elasticity of supply may be considerably higher in LMICs in comparison to high-income countries, therefore, increasing health worker's pay may be a more cost-effective strategy to expand the health workforce rather than expanding training programmes (Qin et al., 2013). However, a coherent data set will be required to establish whether this is equally applicable to India.

One important implication for labour markets of health worker is, the growth of medical technologies over the last decade. This has created the demand for highly skilled workers which can cost more for their production and training and hence their employment. Specifically, this has been impacting the demand and supply of specialist doctors in rural areas, as after incurring high cost for specialised training, they generally do not want to work in rural areas. Further, little empirical research has been conducted on the responsiveness of health worker quality to economic variables. Among the well-known human resource problems in the health sector are low productivity, effort and morale. There is a need to evaluate the impact of changes in salaries, training availability and other working conditions on health worker performance. Some work in this area has already begun (Das & Hammer, 2005). Such studies will help to generate hypotheses about the impact of pay and institutional variables on health worker effort. It will inform about the effectiveness and sustainability of pay for performance and other financial and non- financial incentives to elicit more effort and greater productivity from health workers. Health worker preferences and responses to market conditions are also beginning to attract some research in the context of health worker

recruitment and retention in rural and remote areas. Discrete choice experiments have been conducted in several low- and middle-income countries to elucidate workers' preferences in terms of job characteristics and assess their willingness to be deployed to remote and rural areas (Ryan et al, 2012). Nonetheless, theoretically we lack literature when it comes to analyse the labour market of physicians in Indian sub-continent. Whatever little research has been carried, are mostly for the few selected sub-Saharan African countries. Developed countries like US, UK , Finland, Georgia etc., have tried to analyse physicians and nurses' labour market with the help of demand and supply tools and also estimated wage elasticities because of the availability of time series data on wages of health professionals. But in case of India we lack substantial information about the wages of these professionals.

A better-functioning labour market is important if health outcomes are to be improved. Empirical literature suggests that a key factor in an effective and high-performing health system is the productivity of the health workers. Their productivity is determined by economic and non-economic factors like, the setting in which they work, their level of motivation, work organization, management capacity, the division of labour and subject to other available resources. Such resources include equipment, drugs, examination rooms and other characteristics of the setting (Scheffler, 2012). But in India, health workforce policies are frequently formulated on the basis of the number of health workers required to meet the needs of the population (needs-based assessment), therefore aimed at training more health workers. However, unless appropriate non-pecuniary factors are in place to absorb the newly trained health workers into the labour market, there will be a risk of skewed distribution, brain drain, and eventually wasting of resources (Sousa et al, 2014). India has adopted need based assessment and therefore emphasis on training more physicians are put into the practice which led to mushrooming of privately owned medical colleges. This has led to the emergence of a different kind of market of physicians in India in terms of dual market structure. These factors need to be brought in while theoretically analysing the physicians' labour market.

Chapter Four:

Medical Education System in India and Supply of Physicians in Uttar Pradesh

Chapter Four: Medical Education System in India and Supply of Physicians in Uttar Pradesh

4.1 Introduction

In order to explore the labour market of physicians in urban and rural setting of any region, it would be helpful to observe physician's production process which involves various inputs, processes and efforts. It further includes the costs incurred by different stakeholders at different levels. A significant aspect of production of health worker is related to the choice of a student to adopt for this profession and thereafter those enabling factors which help him to practice medicine. It has been discussed by researchers and policy makers across the globe that in terms of human resource for health a number of countries including developed and developing ones are concerned for the supply of their health professionals specifically physicians. Studies assert that a comprehensive analysis of those factors which effects or may impact upon an individual's choice to invest in medical education should compliment in formulating policy framework by the government. This will inform further as to produce how many medical graduates out of medical colleges to curtail the scarcity of physicians' supply in their health care system (Quinn & Price, 1998). Therefore it can be implied that the labour market dynamics of a physician has a direct linkage with the reasons for which an individual decides to pursue his or her career in medicine.

Pecuniary aspects like good earning potential and stability over the time are quoted as important reasons for them to enter into this field (Quinn & Price, 1998). On the other hand Humlum et al., (2007) argued that most of the economic models consider pecuniary aspect in their models of career choice of a person or for a particular profession, while ignoring the non-pecuniary elements related with the decision making process. It has been discussed earlier that even after entering into labour market for practising their occupation, many of the health workers have a different utility function. They do not maximise only their earnings but their utility function also include social prestige, patient's health outcomes and other aspects. This is not a new dimension to be explored as it has been already pointed in the domain of health economics (Ellis & McGuire 1990). The concepts which underline these theoretical constructs relate physicians' behaviour in labour market to the intrinsic and much wider set of pro-social factors, though much to the fancy of psychologists (Frey & Jegen 2001; Rebitzer & Taylor 2011).

On the other hand, economic theory models the career choice in terms of life time earnings, which is also applied to health care market. Earnings have been considered as an important motivation to enter into labour market, thereby affecting the choice of a student to adopt medicine as a career. Studies like Ausman et al., (2013) presented their observation through students of post secondary level at UAE, who opted for career in medicine and concluded that both familial and non-familial factors are responsible for entering into this field. Puertas et al., (2013) in their review of literature pointed that, there is scarcity of studies related to choices in the field of medicine in LMICs- a fact which can not be ignored for the problem of undersupply of doctors in these countries.

Within the speciality choices, a physician is supposed to opt for those specialities which offer him good earning differentials. Recent research in this field have observed that non-pecuniary factors not only play an important role while opting for medicine as a career at the initial level but also in speciality choices when a physicians moves up to more specialised position (WB, 2013).

Factors which influence physicians' decision to entry into field has been further explained in succeeding chapter[1] with the help of primary data obtained from the field survey. This chapter serves the purpose to see the Indian medical education system and how supply is ensured through it. This will give a supply side picture of physicians at various speciality levels or by the level of education. Next section will look how medical students are allocated in the ladder of higher education system of India, whereby they have been a part of technical/professional education. Further sections will discuss about the specificities of Indian Medical Education in general and then locating it into the context of Uttar Pradesh.

4.2 Medical Education in Comparison to Other Streams of Education in India

Many factors shape the choice of subject at higher level of education in India. All India Survey on Higher Education (AISHE, 2015) database presents an insightful picture about higher education in India. Higher education in India starts from the admission to undergraduate programmes. The GER in higher education is 21 percent as per the latest data. Arts, Humanities and Social Sciences account for 40.8 % of all students (see table 4.1) enrolled in higher education. Females are 52.3 % while males are 47.7 % of the total students in these streams. After this, it is Engineering and Technology, where 17.3 % of total students are enrolled in which 71.2 % are males. Interestingly, when it comes to Medical Science,

[1] See Chapter Five

females account for 60.6% while males are only 39.4% of the total. However, overall enrolment in medical science is below 3% , as per the figure 4.1.

Table 4.1: Enrolment at Under Graduate Level in Major Disciplines /Subjects (2012-13)

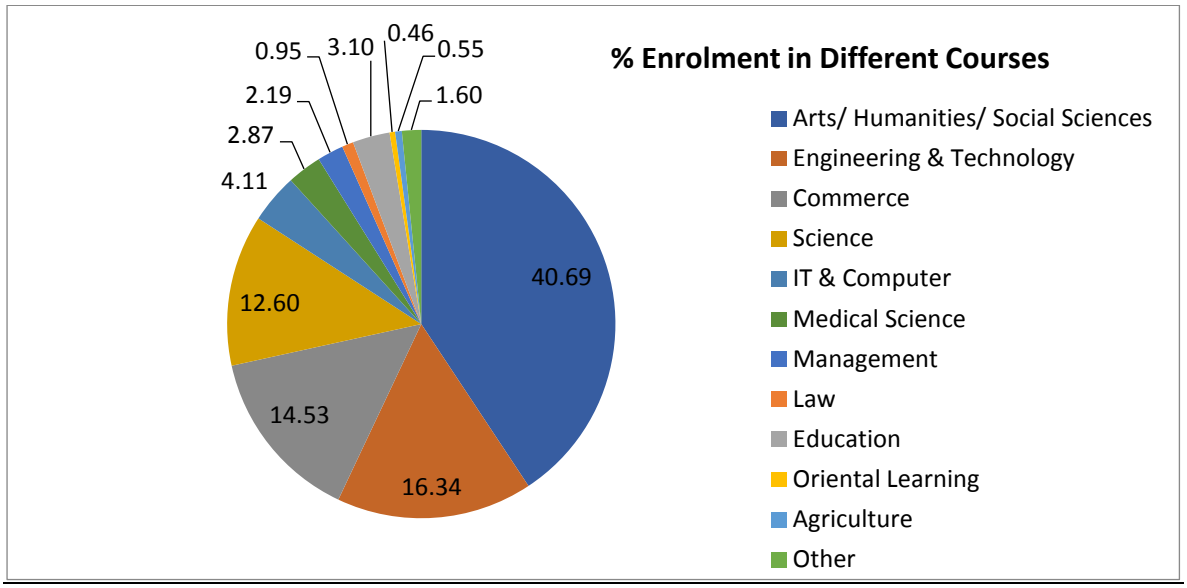
Discipline	Total	% of Total	Number of Females	% of Female in Total	% of Male in Total
Arts/Humanities/Social Sciences	8198107	40.8	4286952	52.3	47.7
Engineering and Technology	3471488	17.3	998974	28.8	71.2
Commerce	2887333	14.4	1288298	44.6	55.4
Science	2533163	12.6	1223488	48.3	51.7
Education	632433	3.1	388765	61.5	38.5
IT & Computer	609348	3.0	254501	41.8	58.2
Medical Science	**597017**	**3.0**	**361943**	**60.6**	**39.4**
Management	427175	2.1	155514	36.4	63.6
Law	187979	0.9	60032	31.9	68.1
Agriculture	128405	0.6	28047	21.8	78.2
Oriental Learning	91588	0.5	46800	51.1	48.9
Others	333115	1.7	179251	53.8	46.2
Total	20097151	100.0	9272565	46.1	53.9

Source: MHRD 2015

From the table 4.1, we find that total 59,7017 were enrolled for medical science steam, while engineering and technology stream caters to the 34,71488 students. Many reasons have been cited as why STEM education is more popular as compared to other disciplines. Firstly, there is strong public support for it both at the family and at the government level. Secondly, engineering colleges have been proliferating at higher rate than the medical colleges. Further the level of fee is lower than the medical sciences.

But as per the figure 4.1, we also find that enrolment is highest for humanities and social sciences (40.69 %). Firstly, not doing well in sciences is associated with genuine problem of requirement of mathematics at higher secondary level, which many of the students, especially females find difficult to cope with. Secondly, mode of instruction in science is basically in English, while majority of students are from non- English speaking background. Students from North, some parts of East and Central India come from Hindi medium background and thus find it difficult carry science stream. It can be observed that most BA courses contain non-urban students, who enrol themselves to language courses, as is the case of JNU, where languages courses at undergraduate level are quite popular.

Fig 4.1: Percentage Enrolment in Different Courses



Source: MHRD (2015)

Table 4.2 shows the study programmes at undergraduate level, where most of the Indian students are enrolled. Courses which have highest percentage for enrolment are Bachelor of Arts (BA) programme[2]. Percentage of female students, are also highest for this course. In case of highly specialised filed like MBBS, only 0.49 percent enrolment is reported for the given period. This is despite of the fact that private medical colleges have emerged to cater the demand for this highly specialised course. Interestingly, percentage of females are higher in the field of medicine[3] after disciplines like BA and Commerce.

[2] In BA Programme, usually student chooses three different subjects from given options and in the final year of programme, they have to drop one subject. It is three year course, where subjects options ranges from Literature, Language, Social Sciences like Political Science, Economics, Sociology etc, even Mathematics and Commerce.

There exist reasons for higher enrolment of female candidates' in medicine in comparison to male counterparts. As per Bhadra (2011), the reasons are more pointed towards its social dimension rather than economic ones.[4]

Table: 4.2: % Enrolment in Different Programmes in Higher Education (2012-13)

Programme	Male	Female	Total
B.A.-Bachelor of Arts	28.22	37.84	32.55
B.Com.-Bachelor of Commerce	11.51	11.30	11.42
B.Sc.-Bachelor of Science	10.41	12.09	11.17
B.Tech.-Bachelor of Technology	9.10	4.46	7.01
B.E.-Bachelor of Engineering	8.07	4.06	6.26
B.Ed.-Bachelor of Education	1.34	2.84	2.01
L.L.B.-Bachelor of Law or Laws	0.86	0.48	0.69
M.A.-Master of Arts	3.45	5.42	4.34
M.Sc.-Master of Science	1.59	2.31	1.91
M.B.A.- Master of Business Administration	2.25	1.44	1.88
M.Com.-Master of Commerce	0.77	1.16	0.94
M.C.A. -Master of Computer Applications	0.92	0.75	0.84
M.B.B.S.-Bachelor of Medicine and Bachelor of Surgery	**0.46**	**0.52**	**0.49**
M.Tech. -Master of Technology	0.61	0.39	0.51
M.E.-Master of Engineering	0.25	0.22	0.24
Other	20.20	14.72	17.73

Source: AISHE 2015

In 1960, women accounted for 6 per cent of the medical school graduates, but by 2006 women medical students accounted for 40 per cent of all medical students and at present constitute around 60 percent. The increase of women's participation in the medical profession has taken place due to the following reasons: (i) a perceptible shift in society's attitude towards women in medicine, particularly in the modern educational climate; (ii) the realization that women make up a vast and untapped source of medical talent; (iii) the obvious difference between the proportion of women medical practitioners in India as against other developed countries; and (iv) the increasing trend for women's participation in gainful economic activities reflecting a changing attitude and shifting cultural patterns in

[4] For detailed historical analysis of females' inclination towards medicine and its various trajectories, see Bhadra (2011): Indian Women in Medicine, An Enquiry since 1880.

society (Bhadra, 2011). However another opposite observation is women doctors' entry at post-graduation and doctoral levels, which is almost one-third of the men. It is found that fewer women opt for specialities as compared to their men counterparts. The reasons mainly attributed to marriage, children and responsibilities arising at later stages of their life. Also, women are much required at the subsidiary level like ANM, Nurses and in Midwife categories. The international recruitment of nurses from India and their increasing demand, have further catalysed their entry into this area rather than preparing for MBBS, BDS or any other category of higher medicine.[5]

Below is the table 4.3 which shows the percentage of students who pass out annually from given programme. We find that pass percentage of Arts/Humanities / Social Sciences are high in comparison to other disciplines. In Medical Science it is just 3 percent, which shows the complexity as well as sophistication of this programme as compared to other technical disciplines like Engineering and Technology, where the turnover is around 10 percent. Perhaps, the reason being stringent entry to this specialised discipline as well as lesser availability of government funded colleges.

Table 4.3: % Pass out in Different Disciplines at Under Graduate Level in Higher Education (2012-13)

Discipline	Under Graduate
Arts/ Humanities/ Social Sciences	41.35
Engineering & Technology	10.24
Commerce	15.00
Science	12.89
IT & Computer	4.16
Medical Science	**3.01**
Management	2.34
Law	1.06
Education	6.87
Oriental Learning	0.96
Agricultural	0.37
Other	1.75

Source: AISHE (2015)

For medical and engineering streams, the societal pressure is very prominent for students especially from family. The demand for medical education has in fact catalysed a major change in Indian education (Sarukkai, 2015). Education in India was primarily a public good and driven by the government. The first private initiative in higher education was

[5] Other categories are, BHMS, BAMS, BUMS Courses or even the Yoga Courses.

basically driven by lack of seats in medical education. This initiative, by Dr. T.M.A Pai, led to the creation of first private medical school at a small place called Manipal. It was initially met with great scepticism but has now grown to become one of the premier private universities in the country. This trend continued later on. The growth of medical schools has been steady but slow perhaps because of the higher investment costs in setting up medical schools which need a teaching hospital attached to them. On the other hand, the growth of engineering colleges has been phenomenal (Sarukkai, 2015), because of the fact that they do not require as much investment and highly specialised faculty as medical colleges.

But as far as social and community preferences are concerned, doctors are in much demand as compared to engineers. Doctors often got enormous dowries in Andhra Pradesh, Karnataka, Bihar and UP because of the social prestige associated with it. It has been observed that amount of dowry is said to subsidize the post graduate degree cost in medicine of that individual (Sarukkai, 2015).

4.2.1 Career Choice in Medical Education: Economic and Non-Economic Rationale

Choice to enter into a particular field of education or employment has been rooted within the extensive framework of human capital. The human capital framework requires education to be considered as a distinct form of capital which has its investment value in terms of rate of return. Within this framework, an individual's decision to invest in a particular type of education is dependent upon the future return minus the direct and indirect costs. Deducing the total cost, if the net return is positive, the investment is usually undertaken (assuming other factors constant)[6]. In this way, demand for schooling is well explained by human capital's investment approach. But for the higher education there are mixed responses for consumption and investment parts for the education (Blaug, 1976). Alternative models have been proposed for modelling the demand for education while taking the factors of individuals' choices (Lehr & Newton, 1978). Further development was observed in forecasting the future enrolment of students based on explanatory variables like future salary, financial aid and other country based macroeconomic indicators (Hoenack & Weiler, 1979). The classical explanation of Becker led to the conceptualisation of medical

[6] Human capital framework assumes in its model that all individuals have necessary ability to undertake a particular programme and there are no income constraints on individual choice. It further predicts that all people with the same ability will achieve the same educational level, thus ignoring the other factors like social constraints etc. This prediction results from the assumptions that there are no supply restrictions, no capital market imperfections and no extra market impediments to competitive behaviour (Joll et al., 1983). For detailed critical discussion about human capital framework see Chapter Three.

education as an investment based career choice (Becker, 1975). Monetary as well as time are invested to complete the career in medicine which encourages student for earning future stream of income at the same time this may act as discouragement to pursue the same because of high opportunity cost at the time of competition. Grayson et al (2012) added that increasing cost of medical education can have its repercussions for a student's career choice. Repayment of educational debt may lead them to high earnings specialities or to opt for private practices or to look for career options at abroad (Grayson et al, 2012). This may have a debilitating effect on the cost of health care provision for any country or region. Institutional factors like government funding gets encouraged when they know that the money which is being spent upon medical education to produce quality care for the population is delivering expected possible returns (Walsh et al., 2013).

However, critics have argued that treating education as only investment good, sidelines its consumption value which is an important factor in case of medical education (Gullason, 1989). They further argued that consumption gain should be included while estimating the return on education apart from the future monetary and non-monetary gains. It may be a general observation that enrolling oneself in medical school will yield only the future earning potential compared to current costs while ignoring the other aspects of adopting this career, like helping the society etc. (Gullason, 1989). The image of medical education is perceived as to serve the public interest by the society and government. This is only one side of the supply of physicians whereby individual's demand and role are taken as one factor. The other side is related to the supply constraint created out of institutional and other socio-economic factors. This includes ability to pay for the medical education, availability of medical colleges and seats they offer for admission and various other aspects of governance.

Although the investment framework provides the response toward economic incentives through the accounting of cost and returns (earnings). It implies that if, tuition fees of medical education rises then it may lead to lesser demand of it or candidate may try to offset it by increasing their future income streams. Incentive to invest in medical education is estimated through NPV (Net Present Value) or rate of return (ROR) approach. As per the Yoder (1983), in general, average rate of return is higher for the investment in medical education. NPV are calculated for investing in medical education along with rate of return. But individual investment and life time earnings may vary for each physician and also different for different speciality choices. External and internal factors like demonstration effect, societal and demographic factors also play an important role for making choices in

medicine at all levels including the speciality choice. Yoder (1983) found that, rate of return does not have much influence over the choice of further specialisation in the field of medicine (Yoder, 1983).

Studies concerning to the field of medical education used investment model to capture the demand for medicine as career (Feldman & Scheffler 1978). Sloan (1971) estimated demand for medical education on the basis of eligible population in a given year. He further included other variables like cost, expected income and the opportunity cost.

Quinn & Price (1998) used number of applicants who fill the form for medical schools as estimation for demand for medical education. The important point is that, number of applicants is taken as the estimate for demand and not the enrolment in medical schools. This is because in most of the cases, the number of applicants may be quite high, while enrolment remains lower as seats are fixed in medical schools. But most of the medical colleges set their enrolment policy as per the future physicians required for that country's health care system. Different demand and supply aspect make medical education a different one form the rest of the categories of higher or other professional education. Demographic factors and supply side constraint also play an important role in this.

Therefore it can be argued that in case of medical education not only the investment aspect of education but consumption value and other demographic variables are important to be considered. The choice to enter into a particular field of education is derived from social, institutional and to large extent economic factors. Even after entering into the labour market, the further specialisation and speciality choice are governed by these factors (though the magnitude of impact of these factors may vary). People choose medicine as per the ability, interests and professional career associated with this profession.

4.2.2 Role of Non-Pecuniary Factors in Choosing Medical Education

The choice of an individual to attend a particular profession is rooted in classical economics. Classical models base their assumptions on pecuniary payoffs and thus unable to provide any significant explanation for choosing low paid careers by high skilled individuals (Spetz, 2002). During sixties, the evolution of human capital framework have provided to internal rate of return to educational investment (Schultz 1963; Becker 1964). This has an important ramification in terms of pecuniary motives which guide the motive to invest in education. However, of late, probability of role of non-pecuniary aspects in decision making for the educational choices has received attention in economics (Arcidiacono 2004; Cunha and Heckman 2007). Wolfe & Haveman (2003) have provided a survey of literature which

concerns the non-monetary benefits of education. These studies tried to delineate the effect of schooling on several other outcomes such as marriage, health, crime, asset management etc. Recognition of these aspects which are other than the earnings, have further prompted economists to focus on consumption value of education (Gullason 1989 ; Quinn & Price 1998). The proposition to consider the consumption value of education is reflected through an individual's utility function. The investment value of education is rented to labour market while consumption value adds to his/her utility function (Heckman 1976; Schaafsma, 1976; Lazear 1977).

To provide an alternative explanation, Akerlof & Kranton (2000) included concept of social identity into the model of career choice and provided related empirical evidence. They proposed that notion of identity can be incorporated into the utility function of an individual. Social identity can provide reasons for the behavioural differences while opting for the career choices of same economic payoffs. Caste or different social background may influence the way an individual decides for his career. Deviation from the ideals of their social category makes the individual to suffer from disutility (Akerlof & Kranton, 2000). Spetz (2002) in his study on nurses found that they went for a baccalaureate degree for non-pecuniary aspects of career, though an associate degree may yield them better financial outcomes. He cited social and personal circumstances as the probable reasons for this. Knoth et al., (2007) argued that people opt for a particular field of education out of its future expected income and also for the social image which can be more rewarding.

Some earlier studies have pointed empirically towards this aspect that occupational choice gets affected by the social identity (Dolton et al., 1989). They further explained that social characteristics of an occupation also play a significant role for affecting the choices of individuals. For example, people may go for jobs in teaching or in public administration despite their lower payoffs. Similarly, in the case of medical graduates, they may decide their work preference on the basis of non-pecuniary factors (Scott, 2001).

Pratt et al., (1999) in their study on students of UK found that 87 % of them made a choice to study for their personal satisfaction. Some 67 % wanted to study just because they wanted to have theoretical understanding of their respective topics in which they were interested. Duncan (1976) used canonical correlations to observe the effect of both pecuniary and non-pecuniary returns for education. He also found an increased significance of education among students if non-monetary variables are added to it. The measures or the variables selected for non-pecuniary aspects may be different as per individual preferences or the study. Gender identity tends to play an important role in educational decision of female

students and also play an important role in stereotyping certain learning behaviour[7] (Hoff & Pandey 2006; Steele & Ambady 2006).

4.3 Medical Education System in India

There is substantial literature with its empirical evidences that health sector requires adequate number of doctors adjusted to its population dynamics, along with other ancillary health workers like Nurses, Midwives and other paramedical staffs. According to World Health Organization (WHO) report of 2006, India was at the rank of 67 among the 133 developing countries in terms of doctor-population ratio (1:1700), while the world average was 1.5: 1000 (WHO, 2006).[8] That means, not even 1 doctor was available for 1000 population, even after more than half century of independence; a goal still far behind as per the recommendation given by Bhore committee in 1946, subsequently modified by Mudaliar committee in 1961 and Bajaj committee in 1987. Given the existing medical colleges in India , it can achieve a target of 1: 1000 (doctor/population ratio) by the end of 2031 (WHO, 2006). However due to retirement, migration and other related factors will create a shortage of 9.54 lakh doctors till 2031. Regional studies and reports support this fact. As per the NCMH (2005), out of 4466 specialists in eight districts of India, 70 percent are in private sector. Similarly, 85 % of general physicians are employed in private sectors who had MBBS degree and not any other specialisation in these districts[9] (NCMH, 2005). On the other hand, as per the recent 92nd Parliamentary committee report presented in parliament in March 2016, India holds the position of maximum number of medical colleges across the world and around 9.29 lakhs physicians are listed in IMR (Indian Medical Register), still lagging behind the required ratio of 1: 1000 doc/population norms (GoI, 2016). The report was prepared to suggest reform in MCI and Indian Medical education system and it explicitly admitted that shortage of physicians have actually obstructed the health care delivery to vulnerable and worse off population.

Producing a physician requires effort not only from the individual student but also from the institution of that country which provides it. Indian medical education system as depicted in the figure 4.2 is designed to produce the basic doctor, who has all the required knowledge of Indian population's demand and needs. Bhore committee (1946) also wanted to have "social physicians" or "social health worker" instead of merely terming it as a

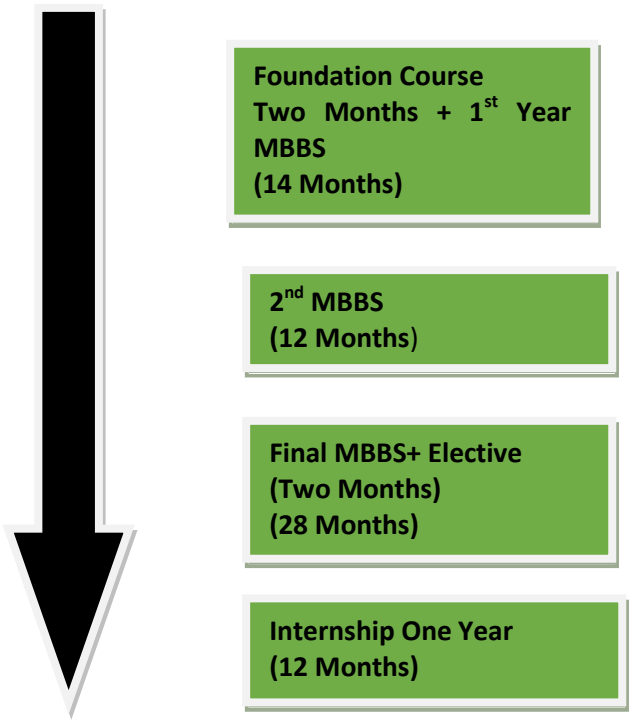
[7] For example, it has been seen that scoring low in mathematics is associated with female's salient identity, though it might not be the real case.

[8] The basis for arriving at the recommendation about minimum doctor population ratio of 1:1000 is made by 'High Level Expert Group (HLEG) for Universal Health Coverage' constituted by the Planning Commission.

[9] These 8 districts were Varanasi, Vaishali, Ujjain, Udaipur, Nadia, Kozhikode, Khammam and Jalna.

physician. They are required to work as a core health care provider in the whole health care system with a sense of responsibility towards the depriving people, though this value has been eroding of late[10]. The primary health care structure in India has been suffering from serious scarcity of these basic doctors especially in rural and underserved areas.

Fig: 4.2 Module of Graduate Level Medical Education in India

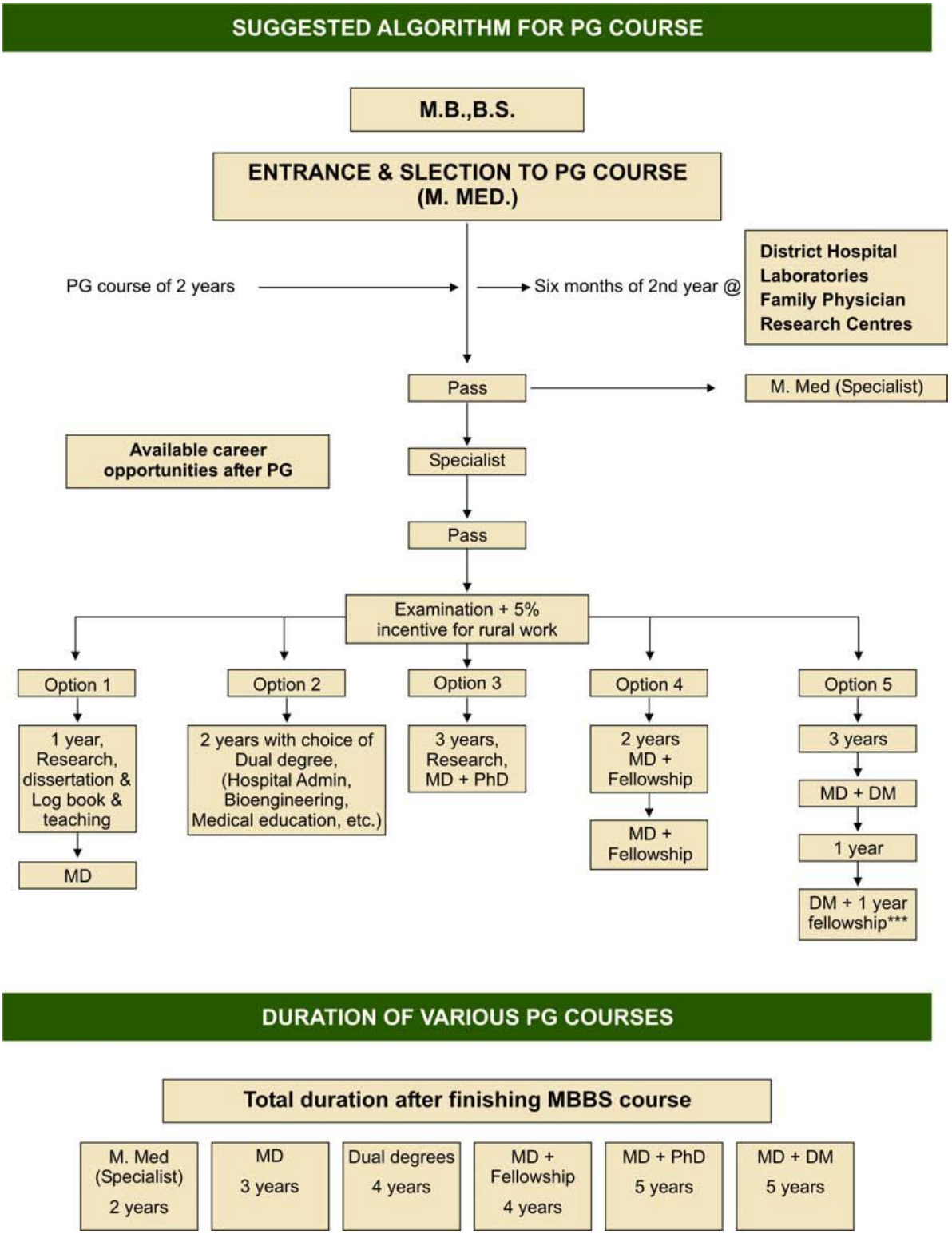


If we observe the given module of undergraduate medical education in India (fig 4.2), we find that it takes aspirants roughly between 6 to 12 years to complete medical training and start practice in the field of their choice. After obtaining the medical degree, the candidate is required to seek a permanent registration certificate from the Indian Medical Council or from any of the Sate Medical Councils. It takes 5-and-half years to complete a basic medical degree (MBBS), another 3 years to obtain postgraduate degree in medicine (Physician) or surgery (Surgeon), another 2-3 years are required to obtain a super specialty degree in

[10] Bhore committee (1946) long back in its report recommended for producing community doctor or '*social physicians'* for Indian health care system. They were also supposed to assist in community development programmes for health given the context and need of the Indian population. But of late, medical practices have raised several concerns for the ethical and moral behaviour of physicians in public parlance. They have resorted to rent seeking instruments for exercising their control as to how and for whom they have to render their services. Not devoting adequate attention and care to public hospitals and also in rural and underserved areas, they have allocated their time for private practices with charging of high fees and recommending the unnecessary and costlier diagnostic tests to patients, thereby creating a nexus with diagnostics and pharmaceutical sectors. The desirable professional qualities among future physicians like compassion, empathy and most important to serve the needs of the society seems to be eroding (Owen, 2002).

medicine (DM) or surgery (M.Ch). The Organogram reproduced in figure 4.3, depicts the post graduate medical education in India, which again takes investment of time to attain a degree in super specialisation of the concerned area.

Fig 4.3: Post Graduate Medical Education System in India



Source: MCI (2015)

The above figures are presented to show the complex hierarchical process and investment of time and money for producing the required level of physician in India.

4.3.1 Distribution of Medical Seats across the Colleges in India

Below the table 4.4 shows the growth of medical colleges since 1950 to 2014 by the difference of ten years. It also shows the enrolment capacity of students both in public and private sector. This table shows that currently we have 176 medical colleges in government sector having total seats 24038, while in private sector there are 209 private medical colleges having 26055 seats. The compound annual growth rate of private medical college is around 8.7 which is more than the government college which is of 3. This table depicts that since 1950, growth rate of public and private medical colleges have been disproportionate. After 2000s, private medical colleges have started to dominate the scene. On the other hand, the rate of enrolment in private medical colleges started increasing after 2004.

Table 4.4: Growth of Public and Private Medical Colleges (1950-2014)

Year	Government Colleges	Enrolment	Private colleges	Enrolment	Total
1950	27	4175	1	60	28
1960	56	7725	4	610	60
1970	89	10925	10	1350	99
1980	96	11425	14	1820	110
1990	102	11800	41	4785	143
2000	115	12720	61	6635	176
2004	121	13320	100	10685	221
2014	176	24038	209	26055	385
CAGR	3	2.8	8.7	10	4.2

All around 19 medical schools were there when India got its independence. Their number increased to 86 by 1965, 112 by 1980 and 143 by 1990 (Vallyamma et. al., 2009). In the post-reform period, due to rapid privatization of medical education, the total number of medical schools increased much rapidly to 287 by 2009 and further to 412 by 2015. In 1990, 33 percent of the medical schools were privately owned, which increased to 57 percent in 2011 (Rao et. al., 2011).

Table 4.5 shows the distribution of MBBS seats in public and private medical colleges across India while including AIIMS and JIPMER. This data presents some important facts

regarding distribution of both the types of colleges. The distribution of private medical colleges has proliferated almost in every part of country but their regional distribution is quite uneven, given the demographic and epidemiological profile of India.

Table 4.5: Distribution of Government and Private Medical Colleges and Seats across the States

State	Government colleges	MBBS Seats	Private medical colleges	MBBS seats	Total colleges	Total MBBS seats
Andhra Pradesh	15	2,450	28	3,900	43	6,350
Assam	5	626	NA	NA	5	626
Bihar	9	950	4	360	13	1,310
Chandigarh	1	100	NA	NA	1	100
Chhattisgarh	4	450	1	150	5	600
Delhi	5	800	2	200	7	1,000
Goa	1	150	NA	NA	1	150
Gujarat	9	1,530	13	1,700	22	3,230
Haryana	3	400	4	400	7	800
Himachal Pradesh	2	200	1	150	3	350
Jammu and Kashmir	3	400	1	100	4	500
Jharkhand	3	350	NA	NA	3	350
Karnataka	12	1,500	34	5,255	46	6,755
Kerala	7	1,100	18	2,000	25	3,100
Madhya Pradesh	6	800	6	900	12	1,700
Maharashtra	19	2,600	25	3,145	44	5,745
Manipur	2	200	NA	NA	2	200
Meghalaya	1	50	NA	NA	1	50
Odisha	3	550	5	500	8	1,050
Puducherry	1	150	7	900	8	1,050
Punjab	3	400	7	845	10	1,245
Rajasthan	6	1,200	4	550	10	1,750
Sikkim	NA	NA	1	100	1	100

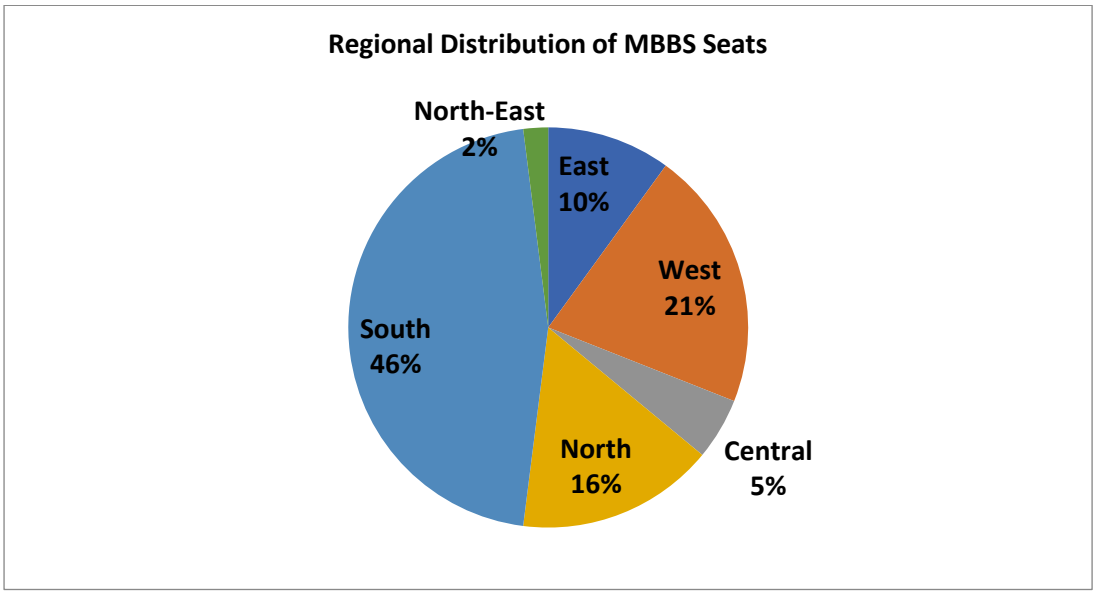
Contd.

Tamil Nadu	21	2,715	24	3,500	45	6,215
Tripura	2	200	NA	NA	2	200
Uttar Pradesh	**16**	**1,849**	**19**	**1,900**	**35**	**3,727**
Uttarakhand	2	200	2	250	4	450
West Bengal	14	2,050	3	400	17	2,450
AIIMS(Outside the ambit of MCI)	7	677	NA	NA	7	677
JIPMER(Outside the ambit of MCI)	1	127	NA	NA	1	127
Total	181	24,774	206	27,205	387	51,979

Source: MCI (2015)

Karnataka tops the list with maximum number of medical colleges and also for the number of total seats followed by Tamil Nadu, Maharashtra, Andhra Pradesh and Uttar Pradesh. Figure 4.4 is constructed to show the general regional demarcation for the distribution of medical colleges across the India. Interestingly, most of the distribution of colleges lie in South which is 46 percent i.e., almost half of the total MBBS seats of whole India.

Figure 4.4: Regional Distribution of MBBS Seats across the Regions



Source: Presented from MCI (2015)

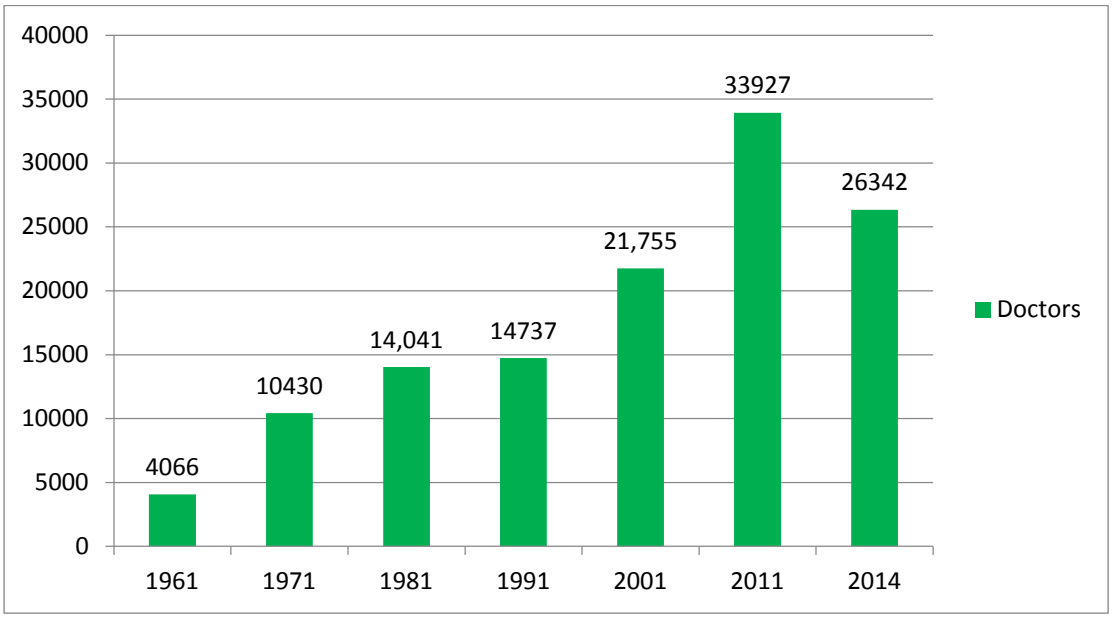
Southern states have the maximum share of the medical colleges accounting to 46.3 %. These southern states are Karnataka, Tamil Nadu, Maharashtra, Andhra Pradesh and Kerala in increasing number of medical colleges. Though Maharashtra is not southern state but given the number of colleges, it is featured at the third place among the states. These states account for only 21 % of population of the country. On the other hand, eastern and northern regions which inhouse more than 45 % of the total population of India, has got only one fourth share of medical colleges. Surprisingly, state like Jharkhand did not have any new medical institution after 1960s. All the three institutions which it owns are established during 1960s. Similarly north-eastern states are also suffering from the distributional in efficiency of medical institutions. There are only 11 medical colleges with total intake of 1128 students in 8 North-East states. To draw the attention, EAG (Empowered Action Group) states have been created in 2001 by MHFW to ensure development and for elimination of inter-sectoral divergences in health parameters. EAG included 8 states (UP, Bihar, Chattisgarh, Odisha, Jharkhand, Madhya Pradesh & Rajasthan) on the basis of larger incidence of neo-natal mortality and other demographic issues. EAG's special session held in 2001 at Patna mentioned it clearly that among these 8 states UP and Bihar had poorest performance in terms of non-existence of medical services and ante-natal care (30 % of pregnant women in 14 districts of UP did not receive any ante-natal care). This situation is to be seen in the backdrop of distribution of medical colleges across the India, whereby it has been discussed through the table 4.5 that all these member states of EAG has most uneven and scarcely distributed medical institutions, where the physicians are needed at most.

4.3.2 Dichotomy between Production and Supply of Doctors

There is an observed dichotomy between the production and supply of doctors which is based on the data of registered stock of doctors and their availability to the population (primarily measured as doctor-population ratio). The annual first-year graduate enrolment capacity accounted for about 51,825 in 2015-16 academic year.[11] The number of doctors entered into Indian medical register annually increased from about 4,066 in 1961 to 14,023 in 1991, 21,263 in 2001, and 33,927 in 2011. This number however decreased to 26,342 in 2014 (figure 4.5).

[11] This is information is obtained and compiled from the Medical Council of India based on its permissions granted to total number of colleges and number of seats in each college as on November 10, 2015.

Figure 4.5 : Annual Registration of Doctors by Select years, 1961-2014



Source: Data obtained from Medical Council of India, New Delhi

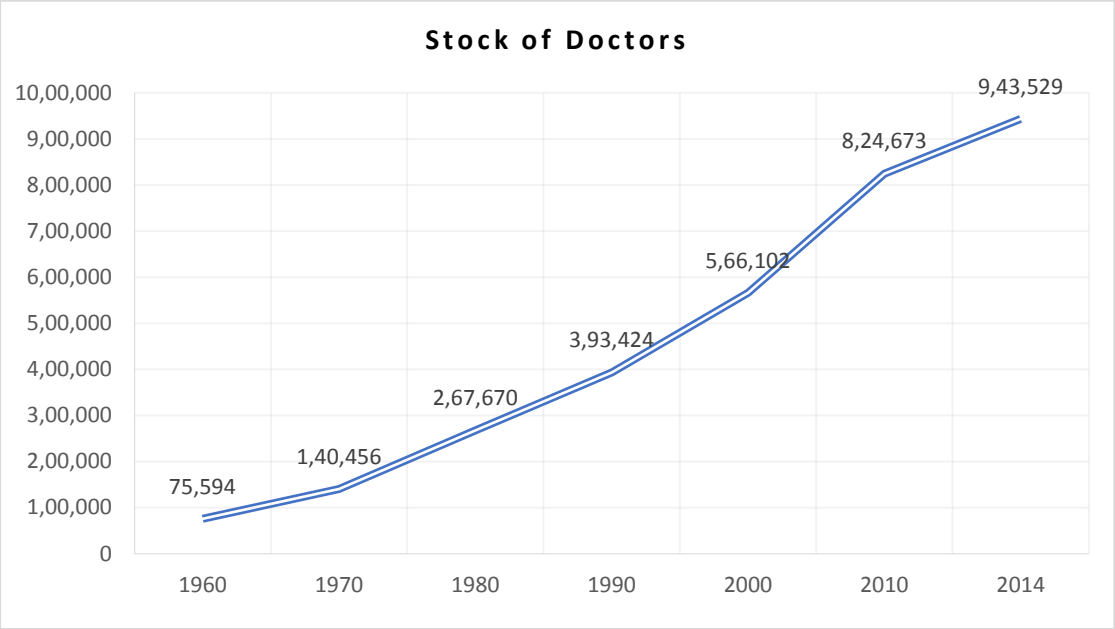
It may be noted that the bulk of this increase in seats (or enrolment capacity) has occurred due to the establishment of 101 new medical colleges with a capacity of 12,200 first-year graduate seats, and an increase of 6,715 new medical seats in the already existing old medical colleges during 2011-15. Together they constituted an increase of about 18,915 new graduate medical seats during this period.

Consequently, the stock of registered doctors expanded from about 75,594 in 1960 to 393,424 in 1990, 566,102 in 2000, 824,673 by 2010, and further to 943,529 by 2014 (figure 4.6).[12] This is one of the largest stocks of physicians in the world, almost equivalent to the physician population in the US.[13]

[12]The major reason for the rapid expansion of medical school education in India after independence was that the Indian planners believed doctors are the key human resources for carrying out its health policies and objectives forward. After the 1962 War with China, in which India faced with acute shortage of doctors for defence needs, Medical Council of India agreed to permit medical colleges to exceed the number of students they had adequate facility for (see Jeffery, 1976). In addition, there has always been pressure on the government from parents and potential students in favour of opening more medical colleges and increasing opportunities for medical education in India. This was also so, partially, because of the childhood dreams that are nurtured among children by their parents for becoming a doctor as the first preference in their career planning.

[13] The physician population in the US accounted for 941,304 in 2007 (AAMC, 2010).

Figure 4.6: Registered Stock of Doctors by Select Years, 1960-2014



Source: Potnuru (2016)

However, it should be noted that doctors' registration data in India is not adjusted to attrition of the strength owing to switching of profession, discontinuation of practice, retirement, death, emigration, etc. In order to make a reliable estimate of the number of doctors available in the country, we may safely assume that all those doctors who have registered 35 years before must have retired by now.[14] Those who lived and practice the profession beyond 65 years of age are considered to be practicing only part-time, and therefore, excluded from full-time workforce count. As noted above, significant number of Indian doctors who have registered their name with the Indian Medical Council also migrated from the country to practice abroad. Apart from the above two reasons, there is also a possibility of doctors voluntarily stopped medical practice to switch to another profession, or have died during their working period.

4.3.3 Registered Stock and Retirement of Doctors

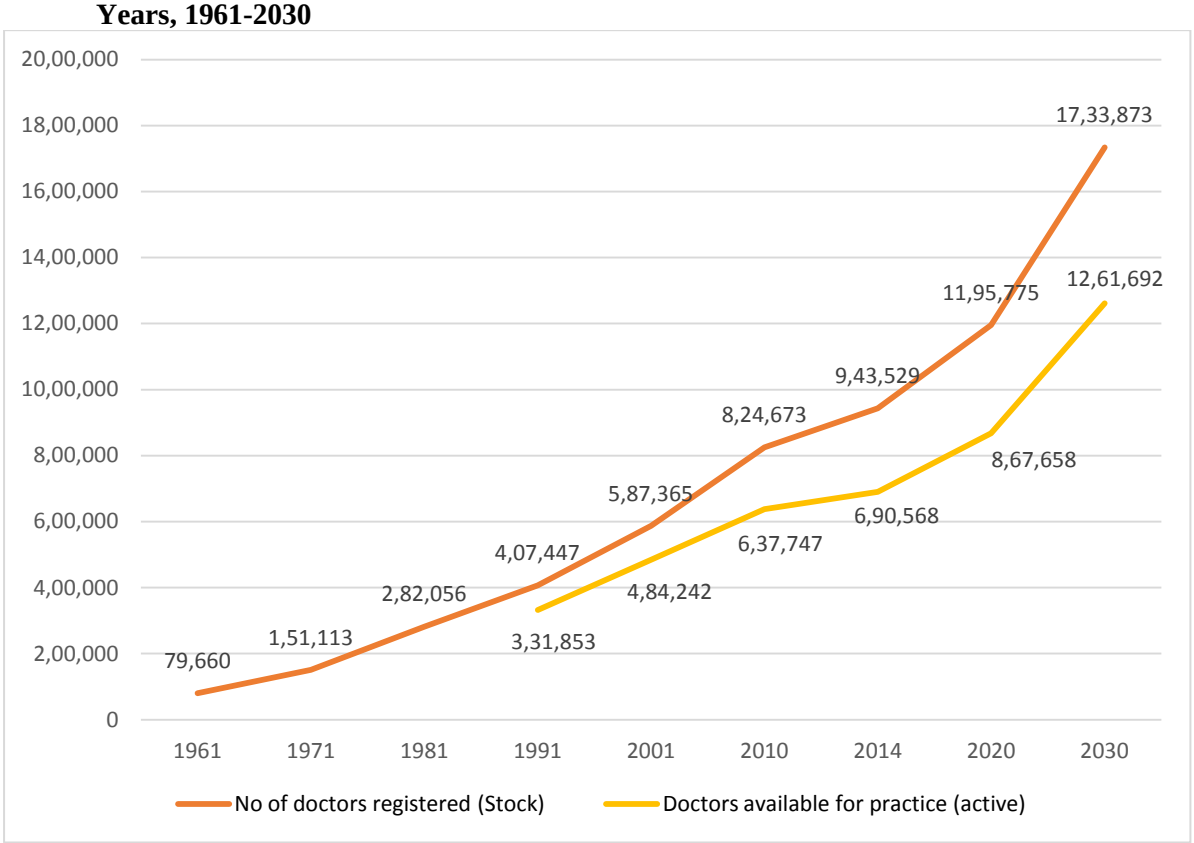
Below the figure 4.7 shows the number of registered stock of doctors and the estimated number of doctors available (or active) for full-time practice in the country after deductions made for retirement. The estimation of the number of available doctors is based on the assumption that a doctor would be able to devote his/her full-time to the professional

[14] This is based on an assumption that an average full-time working life for a doctor is roughly 35 years keeping in mind 10-12 years of medical training and a normal life-expectancy of 63 years in India. The retirement age for public sector doctors prescribed by the State Governments varies between 60-65 years.

service on average not more than 35 years, given a 10-12 years of medical training and normal life-expectancy in India at 63-65 years. This would mean doctors registered 35 years before are not a part of full-time medical workforce in the current year. As per this assumption, Potnuru (2016) found that there are only 690,568 doctors out of 943,529 registered stock are active in medical practice in the country in 2014 (Figure 4.6). The percentage of registered stock of doctors available for practice in the country has declined from 81.44 percent in 1991 to 73.2 percent in 2014. In other words, 27 percent of the current registered stock of doctors has already retired. As 1,239 million population living in 2014, the doctor-population ratio based on this availability turns out to be 5.57 per 10,000 people instead of official estimates of 7 doctors per 10, 000 people.

This ratio is significantly lower than what has been published in the *World Health Statistics (2015)* as 7 per 10,000 population for 2007-13 (WHO, 2015). Since, the gap between the registered stock of doctors and those active in the workforce is widening, as evident in the figure, the registered stock of doctors can no more be taken into consideration as an indicator of availability of doctors.

Figure 4.7: Number of Doctors Registered (stock) and Available for Practice (active) by Select Years, 1961-2030



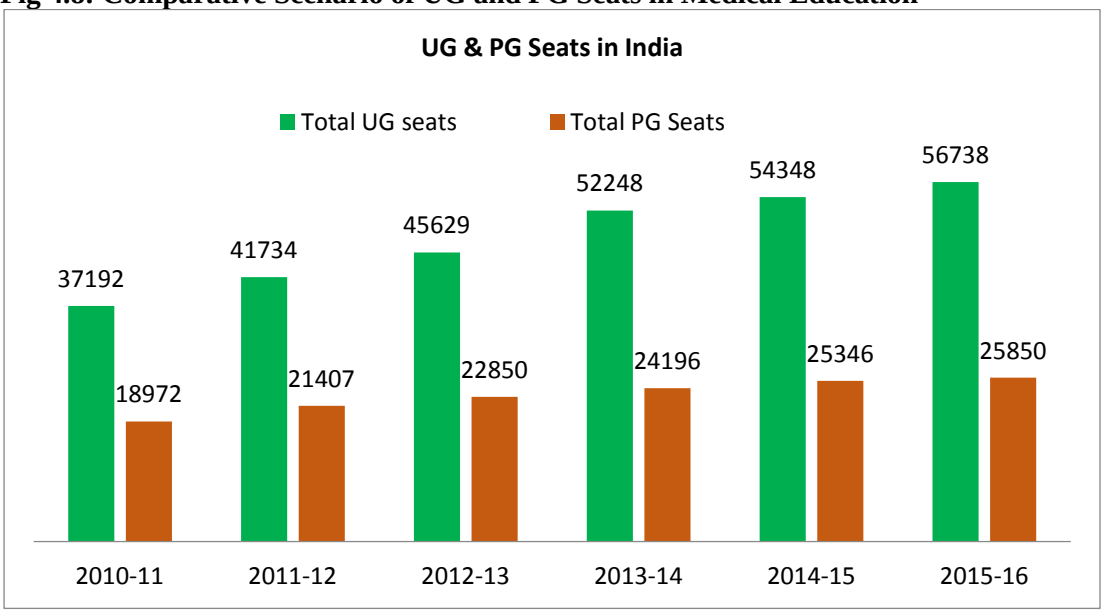
Source: Potnuru (2016)

The Figures 4.7 also shows projections of increase in stock of registered doctors for 2020 and 2030 based on the past decennial growth rates. That is, if the number of registered stock of doctors in India continue to increase at the same rate it had increased in the past (i.e., roughly at 45 percent decennial growth), India will have 1,195,775 stock of doctors registered in 2020 and 1,733,873 in 2030. Taking into account the retirement of doctors by then, the available doctor-population ratio will be limited to only 6.41 and 8.54 per 10,000 population respectively in 2020 and 2030. Therefore the target for achieving standard doctor population ratio will not be possible even by 2030.

4.3.4 Condition of Post Graduate and Super speciality Seats in India

In terms of super speciality seats in government medical colleges, there exists a grim situation as depicted in fig 4.8. Scarcity of specialist doctors and their availability in medical colleges to train further undergraduate students are well mentioned by the MCI. As per the research of Mishra (2011), around 3000-4000 vacancies for faculty positions in medical colleges across the India remained vacant in 2009. The unavailability of specialist faculty in the medical colleges and also to provide quality health care, especially at the time when burden of non-communicable diseases have been increasing, needs to be addressed (MCI, 2015). This has to do further with the innovation, research and development in medical field.

Fig 4.8: Comparative Scenario of UG and PG Seats in Medical Education



Source: Compiled from year wise data of MCI

4.3.5: Regional Uneven Distribution of Physicians across the States

Table 4.6: Status of Physicians across Indian States

State	Population	Gov Allopathic doctors	Average Population Served by Gov Doc	Doc/10,000
Andhra Pradesh	84665533	8199	10326	0.9
Arunachal Pradesh	1382611	418	3307	3
Assam	31169272	4401	7082	1
Bihar	103804637	4963	20915	0.4
Chattisgarh	25540196	1008	25337	0.3
Goa	1457723	419	3479	2
Gujarat	60383628	3484	17331	0.5
Haryana	25353081	2764	9172	1
Himachal Pradesh	6856509	4919	1393	7
J&K	12548926	2948	4256	2
Jharkhand	32966238	1701	19380	0.5
Karnataka	61130704	4611	13257	0.7
Kerala	33387677	5077	6576	1
Madhya Pradesh	72597565	4240	17122	0.5
Maharashtra	112372972	4117	27294	0.3
Manipur	2721756	814	3343	3
Meghalaya	2964007	595	4981	2
Mizoram	1091014	327	3336	3
Nagaland	1980602	327	6056	1
Odisha	41947358	3227	12998	0.7
Punjab	27704236	3545	7815	1
Rajasthan	68621012	7491	9160	1
Sikkim	607688	265	2293	4
Tamilnadu	72138958	7178	10050	0.9
Tripura	3671032	886	4143	2
Uttrakhand	10116752	1060	9544	1
Uttar Pradesh	**199581477**	**9835**	**20292**	**0.4**
West Bengal	91347736	9474	9641	1
A&N Islands	379944	87	4367	2
Chandigarh	1054686	110	9588	1
D&N Haveli	342853	73	4696	2
Daman & Diu	242911	61	3982	2
Delhi	16753235	7749	2161	4
Lakshadweep	64429	22	2928	3
Puducherry	1244464	418	2977	3
All India	1210193422	106813	11330	0.9

Source: MCI

The unequal distribution and access of doctors across states, between public and private sectors, and between rural and urban areas further aggravated the problem of scarcity of doctors and healthcare in India. Table 4.6 presents the status of physicians across Indian states. From this table, it is clear that doctor-population ratio is abysmal for states like Chattisgarh, Bihar, UP, Maharashtra, Jharkhand and Madhya Pradesh. On the other hand, maximum number of government allopathic doctors is found in UP, West Bengal, Andhra Pradesh, Rajasthan and Tamil Nadu.

Based on the State Medical Councils' registration data, Maharashtra alone accounted for 14 percent of the total stock, while other populated and comparatively backward states like Madhya Pradesh and Rajasthan accounted for a little more than 3 percent each in 2015 (see Appendix I). These figures might vary a little because of inter-state migration of doctors but could be considered as a fair indication of the stock of doctors in each state. The foremost reason for this uneven distribution of doctors among states is the uneven distribution of medical schools.

The liberal licensing and malpractices in establishment of medical colleges has led to the unequal growth of medical schools across the country. States with higher human resource requirements, i.e., with highest degrees of disease burden, have the lowest number of medical schools and training capacity. For example, the three states, viz., Maharashtra, Karnataka and Tamil Nadu accounted for more than 35 percent of seats in the country. As against this, the poorer states, such as Bihar, Assam, Madhya Pradesh and Odisha, each had a capacity between 1.39 to 3.45 percent of total seats offered in the country.

4.4 Medical Education in Uttar Pradesh

Uttar Pradesh is the most populous state of India, and geographically it occupies fourth position after Rajasthan, Madhya Pradesh and Maharashtra.[15] Not only in terms of population and area, it is also the most socio-economic diverse state of India having largest number of people living below poverty line in absolute numbers. When it comes to the distribution of medical colleges, which are the only source for the production of physicians, UP is again at fifth place both in terms of maximum number of medical colleges as well as MBBS seats (see table 4.5)[16]. After Karnataka, which is at top in terms of medical colleges

[15] Before the bifurcation of Andhra Pradesh, UP was at the fifth place in terms of area. The fourth place was occupied by Andhra Pradesh.

[16] For complete list of government and private medical colleges of UP, see Appendix II.

and number of seats for MBBS (46 medical colleges with 6755 seats), Maharashtra (with 44 Medical Colleges and 5745 seats) comes at second place followed by Tamilnadu (45 Medical Colleges and 6215 seats) and Andhra Pradesh (43 colleges and 6350 seats). UP is at fifth place with 35 colleges with 3727 seats at Under Graduate level. For the Post Graduation, it has 1295 seats distributed in these colleges. Also, in terms of number of privately owned medical colleges it is at fifth place, while in terms of registration of doctors at UP state medical council, it stands at fourth place with total number 666,33 doctors in 2015 (see Appendix I). On the other hand, among the EAG states, UP and Bihar are the worst performing members in terms of health indicators. This dichotomy between dwindling socio-economic indicators including health and delivery of health related services of UP[17] *vis-a-vis* existing number of public and private medical institutions make it a special case to study the labour market of physicians.

UP has a well devised system in the form of UPCPMT (Uttar Pradesh Combined pre medical test)[18] for selecting eligible candidates in medical colleges. All the medical institutions in UP which are currently 35 in number are approved by MCI (see Appendix II). Among the list of 16 government run medical colleges, the Sanjay Gandhi Post Graduate Institute of Medical Sciences (SGPGIMS) has been established (1983) only for post graduate studies. Apart from this, four other government medical colleges offer both UG and PG courses, while no private medical institutions are reported to have got approval from MCI to offer PG courses. It has been estimated that around 1,30,000 aspirants appeared for UP

[17] In terms of availability of health care services and availability of physicians at public health centres, UP is worst performing state. While looking at the number of medical colleges and registration of doctors with the medical council, it may sound sufficient for the provision of health care but the picture is quite hypothetical. Rural areas are the worst sufferers in this case whereby PHCs, SC, and public dispensaries are there, but doctors and other staffs are missing. Absenteeism of physicians is the most common phenomena seen especially in the eastern and many areas of central UP. The problem of absenteeism of doctors from public health centres had in fact, posed a tough situation for this study also, whereby researcher faced difficulties in finding doctors for the interview in rural areas of Allahabad district. Quacks are the most common and relied upon source for rural areas in eastern UP and even many of the underserved parts of western UP, which is considered as most developed and also lies closer to NCR region. For example in most of the villages under the district of Mainpuri, which is just 300 k.m. away from Delhi, condition of PHC and non-availability of doctors have led to proliferation of private practices and reign of quacks. Destitutes and poor families have to suffer a lot in terms of health expenditure and availability of basic facilities (The Hindu, 30th July, 2016).

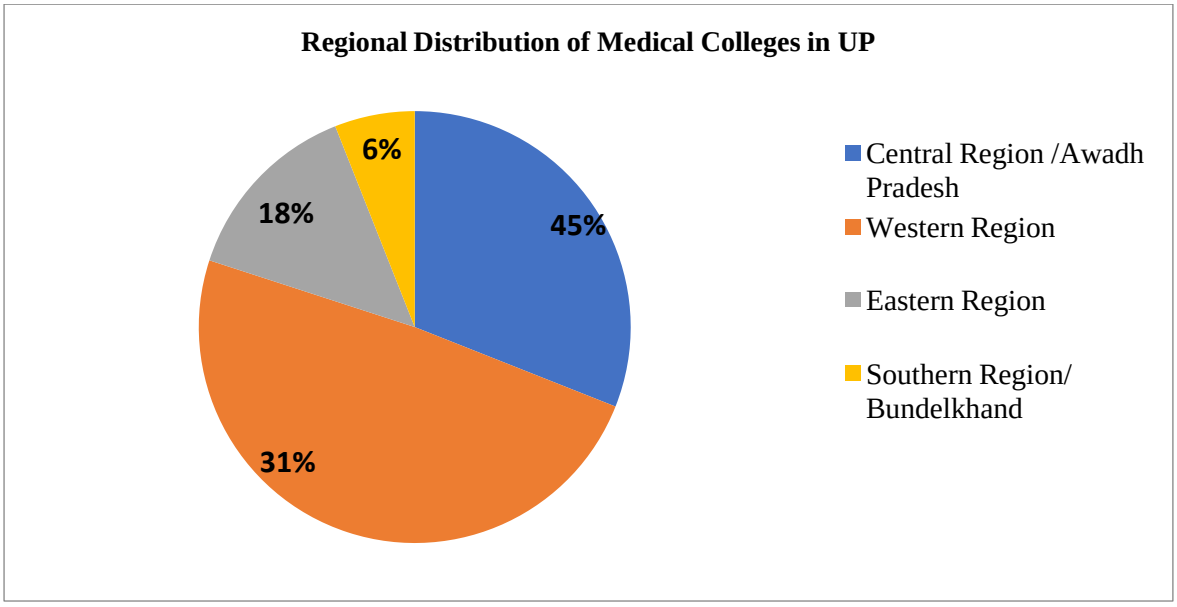
[18] On 28th April 2016, the Hon'ble Supreme Court approved the order to organize NEET (National Eligibility & Entrance Test, which was initially organised in 2013 but revoked) all over the India as a single medical entrance exam. NEET is conducted for admission into MBBS and BDS courses across the country. Central Board of Secondary Education (CBSE) will supervise NEET in 2016. However, AIIMS, JIPMER, AFMC, Manipal and DPMT are kept out of the NEET.

combined medical entrance test (UPCPMT) in 2015, which points out a tough competition to gain a seat in medical colleges.

If we look at the Regional Distribution of Medical Colleges across the state, we find that (see figure 4.9) 49 percent of total medical colleges (both public and private) are located in Western region, i.e., which is also the industrial region of the state and considered as economically most developed in comparison to other regions. Next is the central region or popularly known as Awadh Pradesh (it comprises of 31 percent of total colleges), which comprises state capital Lucknow and adjoining districts. In absolute numbers, 17 colleges are situated in Western region, followed by 11 in Central, 5 in Eastern and least number that is of 2 medical colleges in Bundelkhand or Southern part of the State.

Among the distribution of seats in government and private medical colleges, Private alone takes up the 2140 seats out of the total seats of 3727, which stands out more than 57 percent. It meant that more than half of the medical graduates are coming out of these privately owned institutions by paying huge amount of fees. Students have to face very tough competition to get enrolled themselves to these meagre 1587 seats in government owned colleges.

Fig 4.9: Distribution of Medical Colleges in UP Across the Geographical Regions



Source: Websites of different medical colleges, UP govt. Website, UPCPMT prospectus, MCI

4.4.1 Choice and Competition for Medical Education

As Tapas Majumdar (1983) discussed the two domains of investment in education – the individual and the institutional or societal-the same can be applied to a student who aspires for investing his career in medical education. These two domains of investment in

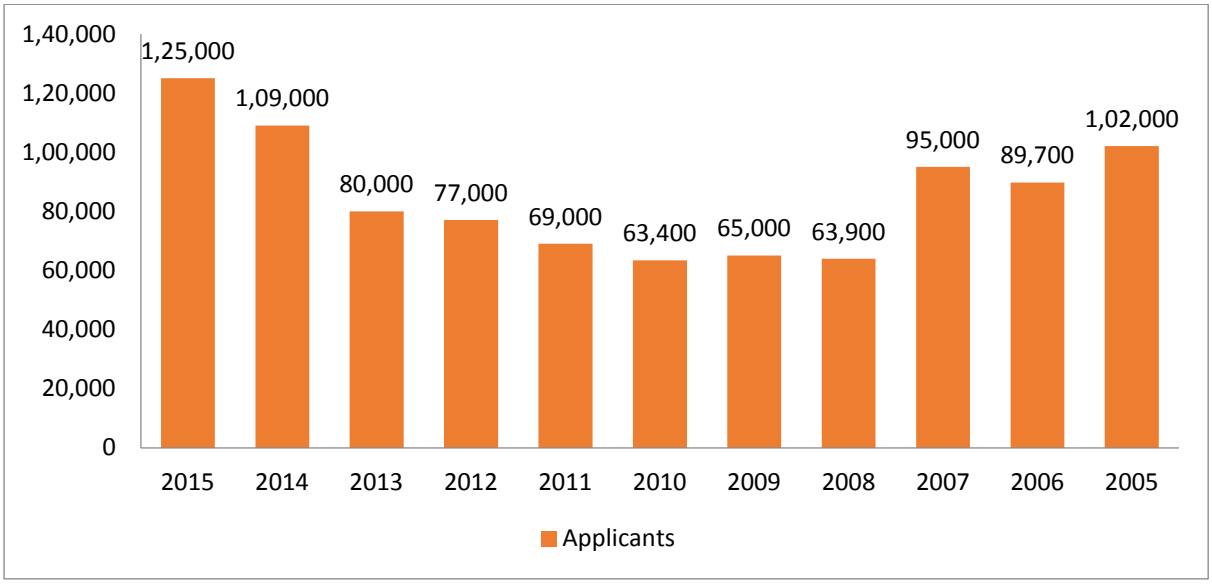
education as mentioned by Majumdar, have two different sets of objectives, time horizons and purposes. In this regard, the rate of return approach obscures some of the essential distinction between the choice situation in the normal capital market and that in education, therefore remains inadequate to apply. The choice is in fact a question of social choice which is based on collective choice of these two domains which further get constituted by micro and macro-economic arguments. The same logic can be applied to the choice in medical education. A student, which decides to invest his time and money to get medical education, situates himself in microeconomic framework. On the other hand, decision by his family and influence of society and further investment by government on him for making him a doctor, are situated in macroeconomic framework.

After passing out from higher secondary that is clearing the 12th level exam, mostly students from northern region like UP and Bihar aspire to enrol themselves in some government medical colleges. Usually a student makes up his mind when he passes out from high school level that is after 10th standard. If he has to prepare for a medical career, he usually adopts Biology instead of Mathematics at higher secondary level, while Physics and Chemistry are there for both the streams.[19] In Uttar Pradesh the entrance test is known as Combined Pre Medical Test or CPMT although 2016 onwards, NEET will replace it. It has been discussed earlier that government run colleges have not increased much as compared to private medical colleges, which is getting established every year. Quality of education and training in rapidly proliferating private medical colleges, have raised questions because of their profit making motives. Huge amount of capitation fees allow richer people to bypass entrance examination and get their wards admitted there. On the other hand, people who can not afford, has the only option to go for government medical colleges. This has led to cut throat competition in Pre-medical entrance test at all India level including UPCPMT. In UP, large number of private colleges offer medical education but it comes with exorbitant costs. Every year lakhs of students take up CPMT to enrol themselves for government provided MBBS seats. Figure 4.10 provides the data for number of applications, received for CPMT for a period of 2005 to 2015. For example in 2016, to compete for merely 1458 seats of MBBS in government medical colleges, around one lakh twenty five thousand have applied for CPMT. This implies that for one seat in government medical college in UP, around 85

[19] To apply for medical entrance exams like CPMT, AIPMT, or AIIMS, students must have Biology or Bio-technology as a subject along with the Physics and Chemistry at the Intermediate level. For General candidate they should have at least 50 % marks in Intermediate, for SC/ST/OBC, it is 40%, to sit for Entrance examination.

candidates are there to fight. In figure 4.10 , there is another trend to be noted that from 2008 to 2013, the number of applicants for CPMT has come down before rising again. During this period, other allied disciplines like Biotechnology have caught the fancy of students, which did not have much competition and also many colleges started offering this course. Establishment of large number of engineering and management colleges have also distracted students to opt for these courses. These factors perhaps brought down the number of applicants for CPMT. However after the recession and oversupply in the labour market of engineering and management subjects have again reoriented students towards the more stable and prestigious career of medicine , therefore again a large surge is reported. In this particular figure it is number of applicants which have been shown rather than the number of students who ultimately got admission. The reason is clear as number of applicants is much accurate measure to show the demand for medical education (Quinn & Price, 1998), on the other hand the number of enrolled students is equal to available MBBS seats in that particular college.

Fig 4.10: Number of Students Filed Application for UPCPMT Entrance Examination



Source: Directorate of Medical Education Department, UP

Owing to this stiff competition, most of the students gear up after the high school examination and try to get enrol themselves for coaching institutions, which has a separate market to cater the medical aspirants. This has given rise to a kind of parallel education system having its own market mechanism, which maintains private characteristics.

4.4.2 Cost Condition of Enrolling in Medical Education

In case of training of doctors, the costs assume heightened importance. The reasons for this are two folds. Firstly, there has been general concern about the rising costs of medical education, especially at the undergraduate level. Secondly, the costs have direct impact on the quality of medical education and, therefore, the quality of future doctors. Jean D Gray and John Ruedy, in a paper titled "Undergraduate and Postgraduate Medical Education in Canada" in 1996 have stated about the cost structure of medical education in Canada, which had increased since 1990 and also the malpractices in its related sectors like licensing exam. Residency programmes had also become costlier which had been making their students to look for cheaper and affordable medical education abroad.

In the Indian context, the earliest effort to estimate the cost at undergraduate medical education was made by Prabha Rama Lingaswami of Jawaharlal Nehru University, New Delhi, in the year 1984. This was published in the Indian Journal of Medical Education (May-Aug 1984). In this study, carried out in 14 medical colleges across India, only recurring costs of the medical colleges were taken into account while working out the costs per student. The study methodology comprised of record reviews, interviews with the faculty in one medical college to develop assumptions about the teaching. The institutional costs (capital and recurring) were analyzed separately (Lingaswami, 1984). An individual student's cost will be much higher for medical education right from the passing of his 12^{th} class examination to the completion of basic MBBS course. If we look at the table 4.7, it will show a general scenario of some of the leading coaching institutes situated in Lucknow, capital of UP, where most of students from other parts of the state come to enrol themselves into these coachings, for cracking medical entrance examinations like CPMT or NEET.

Apart from this, many other cities and towns have come up with their own coaching institutions or branches of the parent coaching institutions. After Lucknow, it is Allahabad where most of the coachings for Medical entrance exam are found followed by Kanpur.

Table 4.7: Coaching Institutes in UP and Their Fee Structure

Top Coaching for Medical in Lucknow	Medical Only	XII cum Medical
Akaash Institute	For AIIMS- 1,50,000/year, NEET- 88,000/year,	Rs. 82,000/=
Trivaag Academy	90, 000/year	70,000/=
SKD Academy	97,000/year	72,000/=
Brilliant Tutorials	1,05,000/year	90,000/=
Allen	1,05,000/year	95,000/=
Pace IIT & Medical	1,00,000/year	78,000/=
Scholastic Classes	55,000/ year	40,000/=

Source: Authors' collection from field

It is important to note here that table 4.7 present only the general coaching rate by different institutions which exclude other expenses like accommodation, food, books, stationary and others. If these costs are included then the total cost will be higher for individual student. One of the students, who live in Lucknow for coaching purpose, was asked about other expenses, for which he said that approximately 10-12 thousand per month can be added apart from the coaching fees. All these costs can be categorised under direct costs. On the other hand, economics of education put emphasis on indirect cost, which includes opportunity cost in terms of time.

Table 4.8: Comparison of Total Expense on Medical Education in Public and Private Institution of UP

	Tuition Fees	Hostel Fees	Security Fees	Registration Charges	Other charges
Private Medical College	6,10,000	75,000	1,50,000	20,000	25,000
King George Medical College (KGMU), Government	18,000	2400	10,000	1000	15,000

Source: KGMU Annual Financial Statement, 2014-15, Hind Medical College
Note: All the expenses are per annum basis and in Rupees

The future cost of education depends upon the type of medical institutions, in which students chooses or get enrolled. Table 4.8 shows the comparison between studying in a government medical college like KGMC and a private medical college (for example Hind Institute of Medical Sciences). A significant difference is observed across the different heads of expenditure between the two types of medical colleges.

4.5 Public and Private Nexus in Medical Education in UP: Governance and Rent Seeking

Rent seeking can be observed in medical sector at various levels wherever profit making activities are involved at par with the objective of social welfare. The concept of rent seeking is popularised in economics by Gordon Tullock[20] under the larger framework of public choice theory (Tollison, 2012). Rent seeking goes beyond the general and quite usual explanation of monopoly rent, its regulation by government and dead weight loss accrued as social costs. It is termed as the first and most commonly used instrument which can be applied to explain corruption and lobbying mainly in public sector through conventional techniques of economic modelling (Lambsdroff, 2002). Arguably, corruption as a bad practice, seek to privatise many of the valuable resources of public life or more precisely public utility (Hillman & Ursprung, 2015). Therefore, corruption is considered as a component or type of rent seeking, whereby private parties find out different means to achieve their interests (mostly economic) through preferential treatment (Lambsdroff, 2002). In this way they also escape from the actual competitive behaviour prevailing in the market. Embarking upon a larger domain to explain corruption and lobbying, rent seeking has drawn the attention of health economists who observe it in every component of health care market. Empirically physicians' behaviour has been discussed through rent seeking approach, especially those employed in multi speciality corporate hospitals and provide health care at secondary and tertiary levels or in their own private establishments. To increase their monetary gain, they usually prescribe for what does not seem to be appropriate or even necessary (Dan & Stevens, 2007). This kind of practice is more common in the context of Indian health care system. Therefore it can be argued that in case of medical education in India and provision of health care in the hands of private entities may represent a case of rent seeking behaviour, which can be corroborated by the facts and prevailing practices as discussed in subsequent paragraphs. Even in particular case of Uttar Pradesh, the same is holding true given the proliferation of private medical colleges in one hand and deteriorating public health care at other, especially in poor and underserved areas.

[20] Tullock has defined rent seeking as accruing profit through the channels of political machinery by influencing later to the extent that they allow it even at the social cost. It involves loss of resources to the benefit of high income elites in developing countries. In developed countries, it influences the political behaviour of government and provides the insight to understand their policy decisions. (For detail, see Gordon Tullock's 'Efficient rent seeking' published in 1980). Tullock is considered as one of the prominent founders of school of public choice in Economics. The academic literature surrounding the concept of rent seeking is not very old . It developed under the public choice domain during late 60's and early 70's by Tullock and thereafter Anne Krueger and Richard Posner have contributed significantly to this literature (Congleton et al., 2008).

It was evident from earlier analysis that after independence, the role of private medical colleges have increased phenomenally in India. During 1950, there was only one private medical college while there were 27 government colleges, and now in 2014, there are 209 private medical colleges, outnumbering the government medical colleges by 33 in number. The number has been growing since then. This is not the only case of overall India but the same has been reported for UP also. The phenomenal growth of medical colleges in UP and in fact in many other states have led to upsurgence of corrupt practices ranging from admission tests to high capitation fees for enrolment in medical colleges. Chattopadhyay (2013) in his study, related to corruption in medical field, discusses mainly two types of corruption in the admission to medical colleges. According to the author, there is rampancy of bribe to gain admission in the medical colleges and, political influence and nepotism in the selection of students. Earlier, Vian (2008) also expressed the similar views regarding medical education in India. The author found corrupt practices in the form of not only securing seat in medical college but the use of bribe to obtain passing grades and use of influence even in getting opportunity for training. Issue of charging high capitation fees have always been a benchmark of private medical colleges as there is no effective regulation mechanism on private institutions to admit student. NIPFP in one of its report mentioned that education sector has become the second largest segment for generating black money in India. It estimated that around 60 billion has been paid as capitation money in medical colleges during 2014 (D' Silva, 2015). This issue has been considered by Supreme Court at various points of time[21] and in one of its judgement in 1992 it declared that high capitation fees is in fact a violation of fundamental right to equality as enshrined in Article 14 of the constitution.[22] The limited seats in government owned medical colleges, tough competition and increasing number of applicants have created an incentive for corrupt practices in the admission of medical courses. In almost every year, the news related to leak of entrance paper appeared in newspapers. In 2015, the UPCPMT paper was leaked before the exam, thereby questioning the accountability of institution. Compared to any other professional courses viz. engineering and management, medical course is witnessing highest instances of paper leak every year.

Apart from these, other major issues are related to financial malpractices in admission in private medical colleges, concerns of quality education, and overall governance of medical education in India. In fact, governance as a broader term incorporates various aspects of

[21] PRS Legislative Research (2010)

[22] Mohini Jain vs. State of Karnataka (1992). http://r2e.gn.apc.org/node/680.

medical practices and medical education as well including corruption and rent seeking behaviour by various stakeholders. In academic parlance and in general policy framework the discussion of governance has not found much attention except some recent overhauling of Medical Council of India (MCI) which got much of the attention from print media. In terms of providing license to the private medical colleges, allowing them to charge unregulated capitation fees and also helping them to get over from other legal hassles, MCI has bred a practice of rent seeking behaviour in the field of public policy making. On the other hand, MCI refused to renew the permit of 6390 seats in government medical colleges during 2014 (D' Silva, 2015). This has a serious repercussion, in terms of students who go for tough competition of AIPMT to get a seat in these medical colleges. They have to look for private medical colleges, who will charge more capitation fees for admission. Around 250 students compete for one MBBS seat in government medical college, thereby rendering a tough choice to the students in terms of huge opportunity cost. Even critics have raised questions about the relevance of entrance exams, which only ascertain a candidate's rote learning capacity and not the aptitude or any social motivation for this noble profession (Jacob, 2016). The private colleges have more seats to offer on the basis of ability to pay without any other reservation or any strict merit based entrance exam. Therefore this act of MCI indirectly implies towards that diversion of public resources have been taking place to the private ones, which will further hamper the dynamics of health care system. The mandate and objectives, for which MCI was established does not seem to be fulfilled at all.

MCI was established in 1934 during the time of British India in the line of General medical council of UK. It got its subsequent reforms in 1956, 1964, 1993 and 2001. Being a statutory and apex body, it is credited with all in all responsibilities of maintaining the required standard of medical education and governing the ethics of medical practices across the India.[23] The enormous power given to MCI related to establishment of medical institutions and the number of students that can be admitted in a medical college, has resulted in corruption of millions of rupees (Sharma, 2001). This has led the Hon'ble High court of

[23] The major functions of MCI included establishment and setting up of the standards of Undergraduate and Post graduate medical degrees, their recognition before issuing license to practice along with recognition of foreign degrees of Indian students who want to practice in India. MCI is responsible for reciprocating with foreign universities for mutual recognition of degrees and also maintaining the register of doctors in India. Although for research and development, Indian council of Medical Research (ICMR) bears the responsibility, still MCI as a statutory body exercises the most powerful control over the physicians' medical degree as well as licensing mechanism. This renders the element of monopoly of MCI over medical practices in India, thereby influencing the supply of physicians at all levels of health care system.

Delhi to order the removal of President of MCI in 2001, after founding him guilty of corrupt practices. Again in 2010, the then president of MCI was taken into the custody for accepting bribe in lieu of providing recognition to a private medical college. Apart from these administrative issues, the structural problems of governance in MCI has come up recently thus instigating the government to appoint various committees for its overhauling. In this series, the recently appointed parliamentary committee has expressed a very dismal overview of the functioning of MCI and proposed a series of reforms in it. In 2011, a bill was proposed in Rajya Sabha named as "National Commission for Human Resources for Health Bill 2011" which suggested for establishing an overarching regulatory body "National Commission for Human Resource for Health" (NCHRH) under the MHFW by scrapping MCI, Dental Council of India (DCI), Nursing Council of India and Pharmacy Council of India.

This is not the first time that policy makers and government have taken cognisance of medical education and health sector reform. The expediency has been felt earlier too. Reform about medical education and management of manpower has always attracted the attention of policy makers since independence. Starting from the Bhore committee in 1946, subsequent committees have drawn attention to the existing practices and other concern of Medical education system of India and production of doctors. Prominent among those are Mudaliar committee (1962) which suggested to train more auxiliary staffs for assisting physicians in rural and underserved areas along with better training at the medical institution with quality teachers (GoI, 1962). In 1975, another important committee was constituted known as Srivastava committee, which recommended to produce 'family and community oriented practitioner'. It further observed that medical education in India was mostly urban oriented and depended heavily on sophisticated instruments and curative methods, while little inclination towards the preventive and promotional aspects of community health, which actually Indian population required (GoI, 1975). Bajaj committee in 1987 pointed toward the existing dichotomy between requirements of health services production of manpower. He reinforced the idea of creating 'community physician', which was earlier mooted by Bhore committee (GoI, 1987). National Knowledge commission (NKC) constituted in 2005 explicitly pointed towards the lack of accountability and effective monitoring mechanism while producing a quality physician (NKC, 2005). Even in current scenario the focus of curriculum is heavily tinted towards science based explorations while humanities do not find any place. Complete absence or lesser emphasis on humanities does not inculcate social or community led values thus making them less sensitive to regional realities and need of the

population (Jacob, 2016). The UG courses in medicine are basically to prepare them for further PG exams and other specialities based entry exams for abroad, thus sidelining the so called need of producing primary health care physician or social physician.

Recent development in this direction is taken up by government's think tank NITI Aayog which is the modified version of earlier functioning planning commission. Aayog has submitted its report as New Medical Commission of India Bill 2016 on 7th August, 2016 which is based on parliamentary committee report on medical education tabled earlier in Rajya Sabha on 8th March, 2016 and in discussion with state health secretaries. It also drew points from observation of regulatory systems of other countries. The proposed bill asked for revamping the MCI structure by establishing a National Medical Commission. However critics argue that its only the corporate sector which lauded the bill, while civic bodies and other professional bodies have termed it flawed in many aspects. Commercialisation is brought in through the channels of either selling seats under the management quota or allowing the establishment of medical colleges by improper channels. Both the ways corruption is bound to happen in this sector. The proposed bill has not addressed to curb these practices. In fact, it has given a positive signal to private institutions and profit orientated bodies to establish medical colleges and also proposed to allow them to charge fees for 60 % of the seats with flexible regulatory mechanism (Times of India, 5th September, 2016). On the other hand, proponents of the bill look at these reforms as progressive and much needed for ameliorating the condition of medical education in country. They point out that New Medical Commission of India Bill 2016 is based on outcome based approach rather than the older one which was input based.[24] The outcome based approach will improve the quality of teaching and learning in medical institutions (Economic Times, 25th September, 2016).

A recent book[25] has tried to document the corrupt practices coming out of the spreading nexus of corporate hospitals, physicians and pharma and diagnostic companies. Terminologies like 'target system' and 'master check up'[26] has been used to describe the

[24] Input based approach focus upon student fees, infrastructure development, salaries of faculty and staffs and other instruments related to production of a doctors, while Output based approach uses the final product like quality of medical education , teaching , number of doctors produced etc.

[25] The book entitled as 'Dissenting Diagnosis' written by Dr. Abhay Shukla and Dr. Arun Gadre, reveals some recent and highly sophisticated system of corrupt practices in multispecialty hospitals.

[26] 'Target system' is used by corporate hospitals to their employed physicians and other related health workers for extracting certain amount of money from their patients either through conducting a false and unnecessary operation in case of minor ailments, or prescribing costly and sophisticated diagnostic test to the patient, though

rampant malpractices among multispecialty hospitals (mainly owned by corporate sector). These hospitals work like an industry with sole motive of earning profit for their shareholders (The Week, 8 May, 2016).

It has been well researched in health economics that health care sector as a whole is more prone to market failure which may not be left for market to correct. That is why most of the countries put medical education within the category of public good. In UK, the National Health Services (NHS) which is publicly funded is responsible for assuring the universal health care to its population. The USA does not consider health as pure public good though it spends 20 % of its GDP on health, much higher than India. Allowing more corporatisation and privatisation in medical education will produce only profit earning oriented doctors, as students have to pay huge sums of money in the form of capitation fees to these colleges, which is not cost-effective. This will gravely hamper the primary and secondary health care in public and district hospitals. Instead of proposing a strict regulation over these practices and regulating the fee structure, the recent bill seems to impacting more the affordability of health care for poor people and also affecting the choice of prospective student to get admission in medical college (Times of India, 5 Sept 2016). It is important to note that NITI Aayog itself admitted corruption in private medical institutions and low quality of education in its report (GoI, 2016).

Summarily, it can be argued that governance of medical education in India and in UP, has been facing serious challenges. The politics and corruption in medical education has been largely ignored in the political and public discourses. The entire system of public health is the least discussed domain among people and within the realm of political governance. Excessive reliance on private sector has led to emergence of high cost tertiary care hospitals, whereby demand for specialists are more than the primary care experts and general community practitioners. To feed into the growing corporate chains of tertiary care, private medical institutes have been drawing trained specialists from public sector. On the other hand, public health care has already been facing scarcity of specialist doctors. This gives rise to rent seeking behaviour among all the stakeholders of medical education and health care system, whereby inefficient allocation of resources (physicians) have been taking place from government to private sector to fulfil latter's profit seeking objectives.

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not required at all. 'Master check up' is related to costly diagnosis techniques referred by the doctor to his patients under the pressure of the management body of the hospitals for earning profit.

Chapter Five:

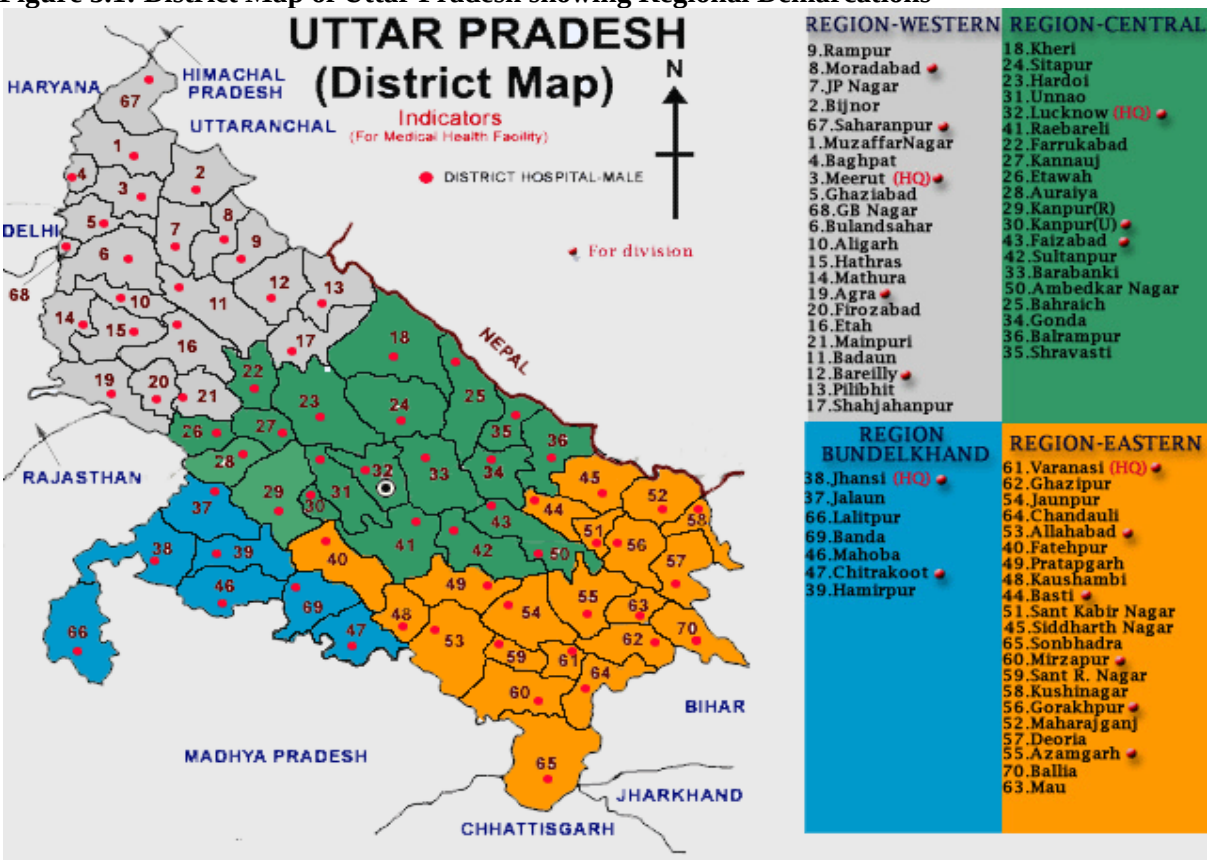
Pecuniary and Non-pecuniary Factors for Physicians' Supply of Labour

Chapter Five: Pecuniary and Non-Pecuniary Factors for Physicians' Supply of Labour

5.1 Health Care in Uttar Pradesh

The major demographic indicators of Uttar Pradesh (UP) have been discussed in first chapter. It has been described in detail about the rationale for choosing it as a case study for studying the physicians' labour market, which is based on some remarkable and distinguished parameters. The case study approach has been adopted to bring out the economic and non-economic parameters of physicians' labour market in UP. This chapter analyses the collected information and narratives from the field survey of government employed physicians in UP. The results and interpretations of present study are rooted in theoretical frame of labour market. This section presents a general picture of health care in UP, before proceeding towards the results.

Figure 5.1: District Map of Uttar Pradesh showing Regional Demarcations



It is not only the data of recent census of 2011, but after the independence UP has been grabbing the slot of most populous state of India. As per the Census 2011, the number is

crossing the mark of 200 million. An overview of its detailed district level map with regional divisions has been depicted in figure 5.1. There are 75 districts in UP with varying geographical and socio-economic characteristics which further impart the state with differential indicators of socio-economic development across the districts and villages.

Apart from holding the largest population, the other demographic and health indicators of this state present a sorry figure, even if compared with the overall national average. The widespread poverty along with low levels of literacy rates have been a concern for the state government. In table 5.1 a comparison is made between national demographic indicators and of UP. In terms of specific health indicators, UP's IMR, MMR and U5MR are featured as outliers in terms of being one of the highest among other states. For example, the MMR of UP is more than the double of national average (392 /100,000 live births and 178/100,000 live births respectively). The high incidence of reported morbidity (GoI, 2015) as well as child and maternal mortalities have been indicating towards inefficiency and unavailability of very primary health care in UP. Recently published Handbook of Indian Statistics, explicitly mentions that Uttar Pradesh has the lowest life expectancy at birth with 63 years along with Assam. It shows highest rate of Infant Mortality that is 50/ 1000 live births, and highest number of people living below poverty line in absolute terms that is, around 60 million people (RBI, 2015-16). This seems to contradicting the huge public investments that are being made in health sector by the state government. Statistical facts reveal that most of the investment i.e., more than 70% are in the form of payment of wage bill to health workers including doctors, nurses and other auxiliary staffs. The contrasting overview is related to medical sector and production of physicians in UP, whereby it stands at fifth place among all other states in India in terms of number of medical colleges and availability of MBBS seats.[1] For example, in 2015, around 666,33 doctors applied for the licence from UP state medical council (see Appendix I).

Although internal migration in terms of rural-urban movement is at large in UP, however the magnitude of international migration of doctors and nurses from state is not very significant as compared to states like Delhi, Bangalore, Chennai or Mumbai.[2] Despite of a huge and distributed network of public and private medical colleges across the state, most of

[1] For detail description of Medical colleges and production of doctors in UP and at all India level, see Chapter Four

[2] No official data set is available for the international migration of doctors from UP. This approximation is based on interviews from the officials of CMO office and UP medical education department and also individual responses from the interviewees.

the people (around 80%) including rural and urban, tend to get themselves treated from private health workers or quacks. In one of the recent exploration by the Hindu from the fields of rural villages of district Mainpuri and Sultanpur, have found that absenteeism of physicians at PHCs and from other public facilities have been a common phenomenon. Most of the people resort to private clinics, local quacks or Ayurvedic doctors and have lost faith in public health workers, also because of their reluctant behaviour (The Hindu, 30th July, 2016). Although it can not be generalised for the urban areas, however UP presents an interesting and curious picture in the backdrop of abovementioned discussion. Furthermore, selection of Allahabad as a district for conducting the interview of government appointed physicians are undertaken because of stark division of rural and urban setting, demographic parameters and other important health related indicators.

Table 5.1: Demographic, Socio-economic and Health profile of Uttar Pradesh State as Compared to India

Indicator	Uttar Pradesh	India
Total Population (in crore)	19.96	121.01
Decadal Growth	20.09	17.64
Crude Birth Rate	27.2	21.4
Crude Death Rate	7.7	7
Natural Growth Rate	19.5	14.4
Infant Mortality Rate	50	40
Maternal Mortality Rate	392	178
Total Fertility Rate	3.3	2.4
Sex Ratio	912	943
Child Sex Ratio	899	914
Schedule Caste population (in crore)	3.51	16.67
Schedule Tribe population (in crore)	0.01	8.43
Total Literacy Rate (%)	69.72	74.04
Male Literacy Rate (%)	79.24	82.14
Female Literacy Rate (%)	59.26	65.4

Source: Census (2011), SRS (2014)

Table 5.2 below shows the performance of Uttar Pradesh along with other major states in terms of key RCH (reproductive and child health) indicators. UP has the highest percentage of unmet need after Bihar i.e. 34 percent and it is above the national average of 21 percent. In states like Punjab and West Bengal it is only 10 percent and 11 percent respectively. In case of ANC (antenatal care) check up, the similar trend is noticed. Bihar is the only state which lagged behind UP. There are only 58 percent of pregnant women who get any ANC check up in UP whereas for Bihar this figure is only 38 percent. The national

average is way above at 73 percent. In case of safe delivery, again it is second lowest just above Bihar with 29 percent and way below the national average of 47.6 percent, whereas in Kerala the share of safe delivery is 98 percent.

Table 5.2 : Performance of UP and Major States of India in Key RCH Indicators

State	Unmet Need	Any Antenatal Check Up	Safe Delivery	% of children age 12-35 months received Full Immunization
Andhra Pradesh	12	94	69	63
Assam	23	61	33	19
Bihar	37	38	29	24
Gujarat	16	88	62	58
Haryana	15	88	43	63
Himachal Pradesh	12	91	51	79
Karnataka	15	91	67	74
Kerala	15	100	98	81
Madhya Pradesh	21	74	36	33
Maharashtra	13	93	63	74
Orissa	24	76	44	55
Punjab	10	89	64	75
Rajasthan	22	68	44	25
Tamil Nadu	18	99	89	92
Uttar Pradesh	34	58	29	28
West Bengal	11	91	54	54
India	21.1	73.4	47.6	47.6

Source: NFHS III

RCH= Reproductive and Child Health

Data in table 5.3 is extracted from the NSSO 71st round on health survey (January to June 2015) to show the extent of use of public and private health services in UP while making a comparison with other states. The number of hospitalised cases treated in per thousand of population is more than double in count in private hospital, which holds true for both rural and urban areas.

It has been argued that proliferation of private medical colleges have shifted the demand for health care in both rural and urban area. UP is at the pace with southern states in terms of number of private colleges and also with the utilisation of private health care services, as shown in the table 5.3.

Table: 5.3: Number (per 1000) of Hospitalised Cases Treated in Public and Private Hospital

Major States	Treated in Hospital				Percentage of Beds in Govt. Hospital
	Rural		Urban		
	Govt.	Private	Govt.	Private	
Andhra Pradesh	225	775	218	782	40
Assam	892	108	515	485	84
Bihar	426	574	388	612	71
Chhattisgarh	494	506	294	706	-
Delhi	631	369	450	550	64
Gujarat	234	766	233	767	42
Haryana	333	667	183	817	75
Himachal Pradesh	758	242	718	282	91
Jammu& Kashmir	939	61	854	146	75
Jharkhand	396	604	264	736	-
Karnataka	268	732	183	817	74
Kerala	347	653	333	667	31
Madhya Pradesh	535	465	417	583	-
Maharashtra	192	808	200	800	57
Orissa	813	187	580	420	98
Punjab	293	707	302	698	75
Rajasthan	542	458	544	456	-
Tamil Nadu	404	596	293	707	78
Uttaranchal	508	492	397	603	-
Uttar Pradesh	**302**	**698**	**283**	**717**	**72**
West Bengal	772	228	526	474	86
India	419	581	320	680	62

Source: NSSO (2015), Report No. NSSK I (71/25.0)

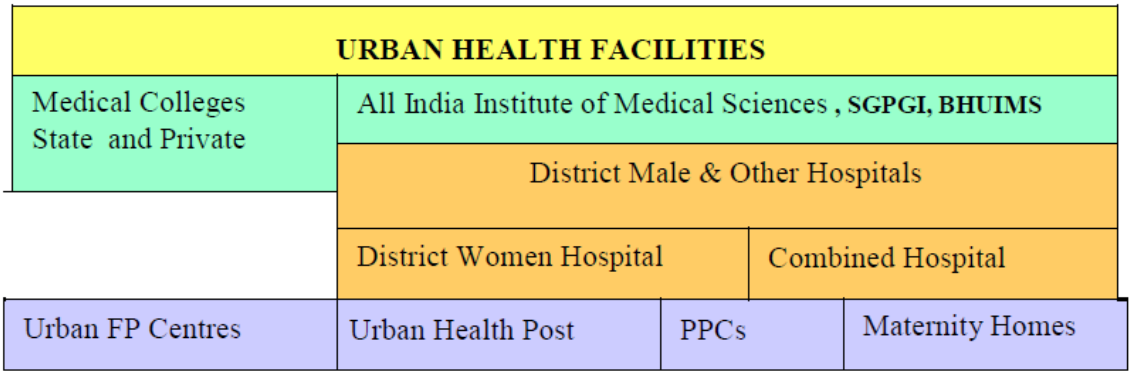
This section was to deliberate upon some of the basic health facilities existing across the whole UP. The purpose was to show the desultory status of public health facilities and access to basic health care by both rural and urban population. To analyse further, an outlook of the structure UP's health care system is required, which is presented in the next section.

5.1.1 Structure of Rural and Urban Health Facilities in UP

In this section, Organogram of rural and urban health facilities in UP is depicted through two adjoining figures 5.2 and 5.3 respectively. The provision of health facilities follows a three tier hierarchical system in terms of its arrangement. District hospital serves at the top level, which may be further divided into female or male district hospital as per the requirement of the population or in most case combined form. Secondary level health facilities are provided through Tehsil or Block level community health centres (CHCs). It serves the population of one lakh as per the criteria decided by health ministry. The third level of health services called as primary health centres (PHCs) are designed to cater the need remote and underserved pockets in rural areas. CHCs also functions as 'referral unit' in rural areas.

Urban health facilities in UP, as shown in figure 6.2, comprise of state and privately owned medical colleges, district male and female hospitals or combined hospital, Maternity homes and urban family planning centres.

Figure 5.2 : Urban Health Facilities in UP

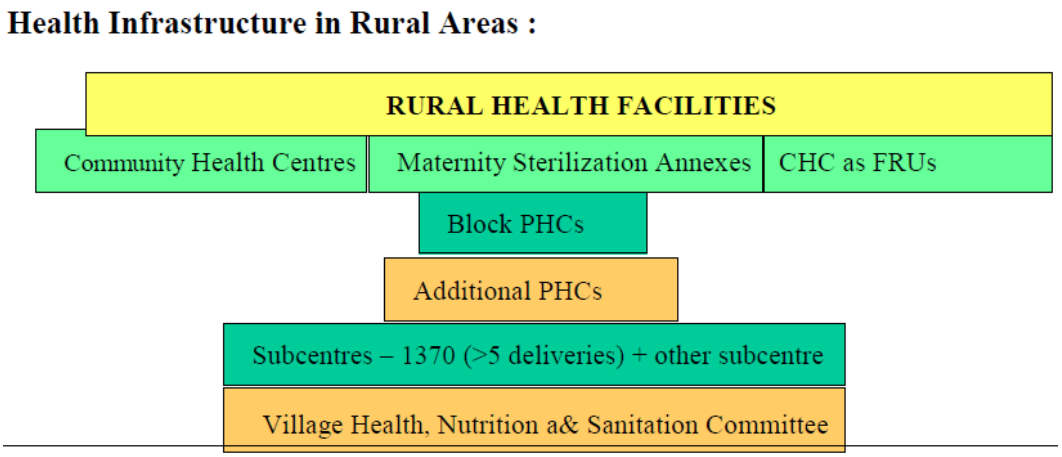


Hospitals at district level are responsible to cater the population of concerned district and villages, blocks listed under that district.

The rural health care system is further combination of different units working together to form a chain. Sub-centres (SCs) are prescribed at the most basic level on the basis of pre-determined norms of population. It serves as the connecting link between PHCs and the population under its area. It is basically the PHCs, which plays an important role in rural health care services because it has been entrusted with the task of providing both the preventive and curative care to the population. It is also credited with the task of promotive care in various capacities.

PHCs are established and maintained by State Governments under the Minimum Needs Programme (MNP)/Basic Minimum Services Programme (BMS). A medical officer is in charge of the PHC supported by fourteen paramedical and other staff. It acts as a referral unit for six sub-centres. It has four to six beds for inpatients.

Figure 5.3: Rural Health Facilities in UP



Community Health Centres (CHC) forming the uppermost tier are established and maintained by the State Government under the MNP/BMS programme. Four medical specialists including Surgeon, Physician, Gynaecologist, and Paediatrician supported by twenty-one paramedical and other staff are supposed to staff each CHC. A CHC is a referral centre for four PHCs within its jurisdiction, providing facilities for obstetric care and specialist expertise.

5.1.2 Health Infrastructure and Physicians in Uttar Pradesh

It has been observed that UP being the largest populous state, is also having the dense network of private health providers. Initially, they were mostly concentrated in urban settlements but with rapid urbanisation and dilution of rural and urban demarcations private providers have captured the rural space also (UPHDR, 2007). This has been validated by one of the surveys conducted by the government of UP. The survey was conducted on private hospitals revealed that there are 2,592 private hospitals with total bed capacity of 47,269. There were 2,321 general hospitals that accounted for 92.4 percent of beds in the private sector, 201 nursing homes with 2,506 beds that offered maternal and child health services exclusively, and 70 hospitals with 1,010 beds which offered specialty services (UPHDR, 2007).

Table 5.4: Aggregate Profile of Health Infrastructure and Manpower in UP

Health Establishments/ Year	2015	2007	2001
Sub-centre	31037	20521	10516
Primary Health Centre	5172	3692	1480
Community Health Centre	1293	515	778
Health worker (Female)/ANM at Sub Centres & PHCs	24213	22464	1749
Health Worker (Male) at Sub Centres	20521	1729	18792
Health Assistant (Female)/LHV at PHCs	3692	2040	1652
Health Assistant (Male) at PHCs	3692	4518	*
Doctor at PHCs	3692	2861	831
Obstetricians & Gynaecologists at CHCs	515	475	40
Paediatricians at CHCs	515	547	*
Total specialists at CHCs	2060	1740	320
Radiographers at CHCs	515	181	334
Pharmacist at PHCs & CHCs	4207	5582	*
Laboratory Technicians at PHCs & CHCs	4207	1836	2371
Nursing Staff at PHCs & CHCs	7297	2627	4670

Source: RHS Bulletin, 2015

Table 5.4 presents the aggregate profile of health centres, manpower and district wise availability of health centres respectively. It has to be seen that numbers of PHCs, CHCs and Sub-centres have shown an increase from the previous years because of the policy level intervention and provisions of universal health coverage. In 2007, there were 20,521 sub centres across the UP, which were increased to 31, 037 at the end of 2015. Same were the case with PHCs and CHCs. The increase has been reported at the district level so as to strengthen the rural health infrastructure across the state, where poor health indicators in terms of various parameters have been observed.

Shortage of manpower at all levels has become the universal characteristic of Indian health care system. This is more pronounced at higher level that is, for the specialists. The situation is grave in terms of requirement of medical personnel *vis-a-vis* their availability, especially in case of doctors and specialists. In this regard, table 5.5 presents an aggregate scenario of physicians required, sanctioned and currently working in position.

Table 5.5: Shortfall in Physicians *vis-a-vis* Requirement

UP	Required	Sanctioned	In Position	Vacant	Shortfall
Doctors at PHCs	3497	4509	2209	2300	1288
Surgeons at CHCs	773	529	112	417	661
Obstetricians & Gynae at CHCs	773	524	115	409	658
Physicians at CHCs	773	523	103	420	670
Paediatricians at CHCs	773	523	154	369	619
Total Specialists* at CHCs	3092	2099	484	1615	2608

*Total Specialists (Surgeons, OB &GY, Physicians & Paediatricians)
Source: RHS Bulletin 2015

The problem of shortages is further compounded by the absenteeism of public sector health personnel in the State. A World Bank study captured the overall percentage of absenteeism and reasons for absence in different states of the country. 45% of the doctors were found absent from duty in UP. Interestingly, 45% were on leave, 9% of them were absent without reason; and 22% (i.e. almost half of total absenteeism) of the doctors were absent from the post because they were on official duty. It raises questions regarding the work schedule which fosters absenteeism of doctors in a state, where huge demand for them exists. It also, apparently, raises questions regarding compromised system of accountability of the health functionaries where absence is generally, camouflaged as field visit etc. Inappropriate skills mix complicates the challenge further, for example, a gynaecologist is posted at a CHC where there is no anaesthetist, which may result in underutilization of skills (UPHDR, 2007).

5.2 Demographic and Health Status Indicators of Allahabad

Allahabad is the southern part of the UP. It is a Tehsil/Block in the Allahabad District. Out of the total Allahabad population for 2011 census, 24.74 percent lives in urban regions of district. In total 1,472,873 people live in urban areas of which, males are 790,848 and females are 682,025. Sex Ratio in urban region of Allahabad district is 862/1000, as per the census of 2011. In rural areas of Allahabad district, sex ratio is 914 females per 1000 males. Similarly, child sex ratio in Allahabad district was 878/1000 in 2011 census. Child population (0-6) in urban region was 162,949 of which males and females were 86,758 and 76,191. Children constitute 10.97% of total urban population. Average literacy rate in Allahabad district as per census 2011 is, 82.51 %. Gender wise, male and female literacy stood at 80.97 and 55.46 percent respectively. Table 5.6 summarises some of the important demographic and health related indicators of Allahabad for both the rural and urban settings.

Table 5.6: Demographic and Health Indicators of Allahabad

	Urban	Rural
Population	1,472,873	4,481,518 (75.26 %)
Sex Ratio	862	914
Literacy	82.1 %	68.76%
Child population	162, 949 (11% of total urban population)	722,406 (16.27% of total rural population)
IMR	57	92
MMR	252	366
U5MR	71	125
Male Literacy	84.52 %	83.57 %
Female Literacy	79.33 %	57.04 %

Source: Census (2011)

For observing the overall health condition in different districts of UP, table 5.7 is given below. The districts have been arranged as per their rank in health index as constructed by Uttar Pradesh Health Development Report (UPHDR) in 2007.

Among the 70 districts taken by UP Human Development Report, Allahabad stands at the rank of 56, which in comparison to its vast population and health related requirements, is below satisfactory level. This is despite of the abovementioned fact that government has been increasing the health infrastructure in terms of providing health centres. But again the efficiency and availability of manpower remain an important factor to be looked upon.

Table: 5.7: Districts Arranged in accordance with their Rank in Health Index

District	Health Index	Rank	District	Health Index	Rank	District	Health Index	Rank
Balrampur	0.7833	1	Kheri	0.66	25	Mahoba	0.61	48
Gautam Buddha	0.7277	2	Badayun	0.65	26	Sitapur	0.62	49
Ghaziabad	0.7277	3	Bulandshahar	0.65	27	Rampur	0.61	50
Ghazipur	0.7187	4	Mainpuri	0.65	28	Pilibhit	0.61	51
Agra	0.7143	5	Jhansi	0.65	29	Sultanpur	0.61	52
Gorakhpur	0.7014	6	Kushinagar	0.65	30	Kaushambi	0.61	53
Mau	0.6993	7	Deoria	0.65	31	Unnao	0.61	54
Meerut	0.6993	8	Azamgarh	0.64	32	Siddharthnaga	0.61	55
Bahraich	0.6993	9	Kanpur Dehat	0.64	33	Allahabad	0.61	56
Hathras	0.6910	10	Bareilly	0.64	34	Fatehpur	0.60	57
Mathura	0.6910	11	Aligarh	0.64	35	Maharajganj	0.60	58
Kanpur Nagar	0.6849	12	Muzaffarnaga	0.63	36	Banda	0.59	59
Lucknow	0.6849	13	Kannauj	0.63	37	Lalitpur	0.59	60
Saharanpur	0.6829	14	Farrukhabad	0.63	38	Gonda	0.59	61
Faizabad	0.6810	15	Chitrakoot	0.63	39	Rae Bareli	0.59	62
Sant Ravidas Nagar	0.6810	16	Barabanki	0.63	40	Etah	0.58	63
Varanasi	0.6810	17	Basti	0.62	41	Shahjahanpur	0.57	64
Chandauli	0.6810	18	Jalaun	0.62	42	Hardoi	0.57	65
Ambedaker Nagar	0.6810	19	Auraiya	0.62	43	Shrawasti	0.57	66
Jyotiba Phule Nagar	0.6654	20	Etawah	0.62	44	Ballia	0.57	67
Moradabad	0.6654	21	Firozabad	0.61	45	Baghpat	0.56	68
Jaunpur	0.6636	22	Hamirpur	0.61	46	Bijnor	0.54	69
Mirzapur	0.6617	23	Pratapgarh	0.61	47	Sant Kabir	0.54	70
Sonbhadra	0.6598	24						

Source: UPHDR(2007)

5.3 Health Infrastructure in Allahabad and nearby Villages

According to Census 2011, there are about 118 villages in Allahabad block. The district is divided into eight Tehsils named as Sadar, Karchhana, Phulpur, Bara, Koraon, Meja, Soraon and Handia. Tehsils are divided into Development Blocks. There are twenty development blocks. Kaudihaar, Holagarh, Mauaima, Soraon are the development blocks in

the Soraon tehsil. Bahria, Phulpur, Bahadurpur are the development blocks in the Phulpur Tehsil. Pratappur, Saidabad, Dhanupur, Handia are the development blocks in the Handia tehsil. Jasra, Shankargarh are the development block of Bara tehsil. Chaka, Karchhana, kaundhiyara are the development block in the Karchhana Tehsil. Uruwa, Meja, Manda are the development block in the Meja tehsil and Koraon is the development block in the Koraon tehsil.

Table 5.8 : Health Care Services in Allahabad

Year / Block	No. of hospitals / dispensaries	No. of Public Health Centres	No. of Primary Health Centres	No. of total beds available	Total workers		
					Doctors	Para-Medical	Others
2012-13	70	18	69	3722	362	669	1094
2013-14	70	18	69	3722	329	669	1094
2014-15	59	19	92	3748	327	669	1094

Source: CMO, Allahabad

Health services in Allahabad city are mainly provided by the public sector, including the Department of Medical, Health and Family Welfare, and the Private sector (hospitals, nursing homes, and clinics). In addition, charitable hospitals provide subsidized health services to the poor. Additionally, there are Central Government health facilities, which include Railways hospital, ESI hospital/dispensaries and Cantonment hospitals/dispensaries. Primary health care is provided by first tier centres including 12 urban health posts, 3 urban Family Welfare Centres, and 30 dispensaries. Though public health infrastructure is fairly extensive, the private sector is an important player in the city. There are 1421 health practitioners, 272 Maternity /Nursing Homes, 6 Certified Abortion Providers and 10 Certified NSV/DMPA Providers. Various indigenous systems of medicine health facilities such as Ayurvedic, Unani and Homoeopathic are also available. Allahabad city also has many charitable health care providers offering services.

5.4 Description of Sample

The sample for the study is drawn from rural area of block Bahria and Koraon and for urban area, Allahabad city is chosen. A total of 80 doctors were interviewed in both the settings, 35 from the rural PHCs and CHCs, and 45 from the city of Allahabad. The study covered 4 CHCs and 7 PHCs located in remote and rural areas of Bahria and Koraon. Table 5.9 is presented for referring the condition of HRH in blocks of Allahabad district, including

Bahria and Koraon. The target was to interview 90 physicians in total out of which 80 turned out to participate in interview process, therefore the response rate was 88%. Information obtained from the questionnaire were categorised and fed into the IBM-SPSS AMOS software module of version 23. Findings from both the settings are analysed simultaneously so as to bring out the stark division of rural and urban sector, as per the objectives of the study.

Table 5.9: Block wise Health Centres and Physicians/ HRH in Allahabad

Block wise	No. of Hospitals/Dispensaries	Public HCs	PHCs	No. Of Total Beds Available	Doctors	Paramedical	Others
1. Kaurihar	1	1	6	44	13	19	54
2. Holagarh	1	0	2	6	3	11	41
3. Mauaima	3	1	3	38	11	16	41
4. Soraon	1	1	3	36	9	21	47
5. Bahria	0	1	3	38	8	14	42
6. Phulpur	2	1	2	34	10	18	33
7. Bahadurpur	0	1	6	40	12	15	48
8. Pratappur	0	1	5	42	10	12	28
9. Saidabad	0	1	4	12	7	18	26
10. Dhanupur	0	1	4	40	9	14	22
11. Handia	2	1	5	40	13	27	31
12. Jasra	1	1	3	36	10	19	33
13. Shankargarh	1	1	2	34	9	19	21
14. Chaka	0	1	2	34	8	31	41
15. Karchhana	3	1	3	36	11	23	32
16. Kaudhiyara	1	1	1	32	6	14	20
17. Uruwan	1	1	3	36	7	19	24
18. Meja	0	1	3	36	5	15	24
19. Koraon	1	1	4	38	8	22	28
20. Manda	1	1	3	36	8	20	19
Total Rural	19	19	67	688	177	367	655
Total Urban	40	0	25	3060	150	302	439
Total District	59	19	92	3748	327	669	1094

Source: CMO, Allahabad

5.5 Findings

PHCs selected for interviewing doctors were far away from their corresponding district headquarters. In terms of transport facilities, the situation was quite unsatisfactory for many of the health centres either because of dilapidated conditions of road or unavailability of proper public transport. Health workers including doctors have to rely upon their own vehicles or ambulances (if it is available then, otherwise in most of the cases it has been found that in interiors of villages, the ambulance facility is not even working properly). Although government provides travel allowances with the basic salary structure, but when it comes to sudden visit for treating patients, the condition may act as a barrier for providing

health services. Disruptions in transportation facilities had posed difficulties to the researcher while approaching to the field in rural pockets.

5.5.1 Descriptive Statistics

Before proceeding towards the findings, a brief overview of related descriptive statistics of the chosen sample is presented. Table 5.10 shows the percentage distribution of doctors in two parameters, viz., sectoral (rural and urban) and gender wise distributions.

Table 5.10 : Percentage Distribution of Doctors across the Gender and Sector

	Male	Female	Persons
Urban	54.5	61.1	57.5
Rural	45.5	38.9	42.5
Total	100	100	100

From this case study of 80 doctors across these two sectors, labour market dynamics is more tilted towards the female doctors in urban sector. This supports the assumption of segmentation in the labour market in favour of urban, especially in case of female. Out of the total doctors, 34 were females and 44 were males. Within the female, 61.1 percent are working in urban sector, while only 38.9 percent are in rural sector. The same holds true for male doctors but there percentage is lesser than female ones. Theoretically, gender discrimination in labour market is analysed from the employer's perspective (Becker 1957; Cain 1976)[3] but in case of Indian labour market for physicians in Indian, the role of individual and societal factors become more important. However, in many of the cases, individual preferences are profoundly influenced by institutional factors.

[3] The labour market discrimination in economics is primarily based upon income and wage differences caused by race, sex, ethnicity and other characteristics depending upon the context (Cain, 1976). Becker's idea of discrimination was concerned with practices by employer which is based on 'taste of discrimination' and prejudiced notion of black worker in comparison to white workers. Altonji and Blank(1999) based their theories of group differences by observing them on the basis of preferences and skill. In standard economic theory as proposed by Arrow (1973), discrimination arises because of how skills are valued in the market, and furthermore how they differ in their productivity. Discrimination based on gender is viewed as pre-conceived notion that females are less productive (not because of skill difference) as compared to male counterparts because of various reasons.

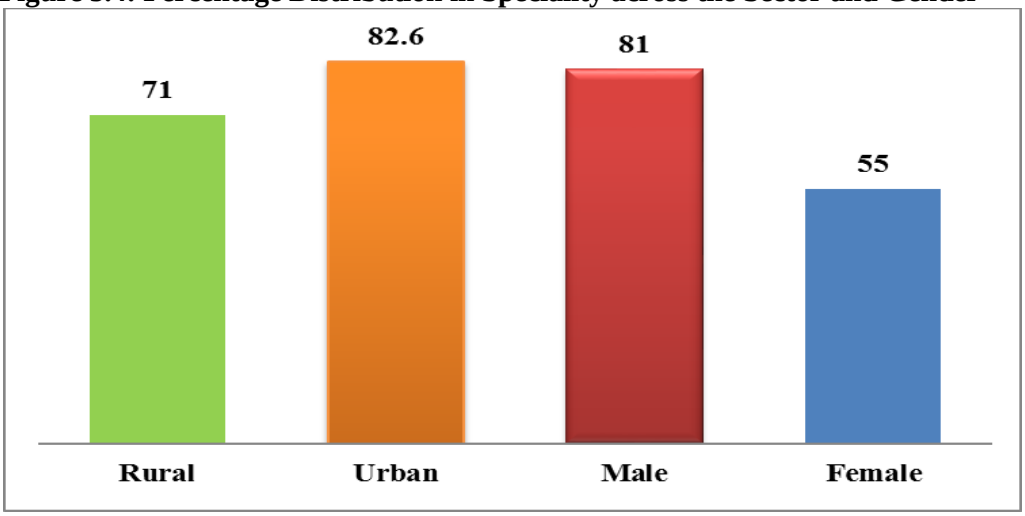
Table 5.11: Mean year of Age and Experience of Physicians

Variable	Male	Female	Rural	Urban	Total	Std. Dev
Mean Year of Age	40.1	39.2	40.3	41.2	40.3	0.456
Mean year of Experience	14.5	13.1	11.9	13.8	13.9	0.993

Table 5.12 shows the mean year of age and mean year of experience for interviewed doctors. Here again the demarcation is observed thorough the gender as well as based on sectoral settings. Through this simple statistics it has been observed that there is no any significant difference for the age factor, but when it comes to their experience the urban doctors featured with higher experience than their rural counterparts.

The reason can be attributed to the fact that most of the urban doctors have secured more specialisation along with their practice. This is because of the easier availability of higher training opportunities in urban areas. This does not lead to inference that rural practising doctors do not go for or possess the higher degree of specialisation. But their percentage is below as compared to urban doctors. Further the corruption at higher levels of admission for super speciality courses drive candidates out. Consequently out of this, many doctors opt for their practice in rural area. Also in cities, there is more competition to acquire higher degree and specialisation because it attracts more patients. Higher degree and specialisation are seen as prestigious position for the doctor in their own group. Mean year of experience of female doctors, which is found to be 13.1 years, is lesser than the male doctors. This may lead to the observation that female doctors start late earning or entry to the labour market, which again can be an outcome of various social factors associated with them.

Figure 5.4: Percentage Distribution in Speciality across the Sector and Gender



Division of labour on the lines of gender within the medical profession in most countries is unequal and there is vertical segregation, with overrepresentation of men at the higher levels of the profession, as well as horizontal segregation, with concentration of women in certain areas of practice. The observation presented in figure 5.4, which supports the previously hypothesised notion that representation of women in terms of differentiation of skills are converged to a particular speciality. Among the sample, it has been found that only 55 percent of female doctors are specialised further after MBBS. In case of male, this number is 81 percent. This is despite of the fact that in medical stream female students have outnumbered the male students.[4] As Bhadra (2011) argued that women's participation at the entry level i.e., at the bachelor's level, has been quite satisfactory (in 2010, their participation was around 50 %), but the gap becomes clearly visible at post-graduation and further levels of higher specialisation. In addition, those females who look forward for any specialisation differ in their choices of choosing a particular speciality in comparison to their male counterparts. It has been argued that most of the complex and highly specialised fields like neurology, urology, cardiology etc. or higher degrees like M.Ch and D.Ch have been the domain of male physicians.

In this regard, one of the female physician working in rural area have shared her viewpoint while conducting the interview-

"*Female doctors prefer to specialise in Gynaecology, second option being paediatrics or ENT, but very few of them go for higher specialisation like M.Ch or D.Ch etc, especially in regions like UP and Bihar. Reasons are many, ranging from Gynaecology being a discipline related to female only and other sociological reasons. Also, the family and household factors play a very important role in further specialisation after MBBS."*

(A female doctor in rural area)

There is also a point that the socio-cultural norms in India and mainly in rural India favoured a female doctor rather than male for female health related issues, which has created demand for female physicians and that too for more gynaecologists rather than any other speciality for them.[5] It is clear that women have tended to gravitate towards certain

[4] See Table 4.1 in Chapter Four for detailed description concerning this aspect.

[5]In the late nineteenth century and early decade of twentieth century, demands for women medical professionals grew mainly for the improvement of maternal health conditions. The demand came from middle-class Indian women who regarded Western medicine as modern and scientific and on the part of the government which demonstrated its "civilizing mission" by establishing hospitals, clinics and dispensaries in different parts of

specialties: the reasons for this selection are manifold and would include level of investment of time and effort, predetermined concepts, and a variety of real or conjectured hurdles. It may be that some women make conscious decisions to avoid certain areas of specialization for several reasons; some personal, others professional. In this study, it has been found that female physicians, who specialised further, mostly opted for gynaecology followed by Paediatrics and ENT. This substantiates the hypothesis that choice of speciality is influenced by the socio-cultural factors of society and institution rather than purely economic motives.

Table 5.12: Male and Female doctors across the Religion (%)

Religion	Male	Female	Total
Hindu	72.7	61.1	67.5
Islam	22.7	33.3	27.5
Jain	4.5	0	2.5
Christian	0	5.6	2.5
Total	100	100	100

Table 5.13 categorises the respondents in terms of their religion both for the male and female. Although religion does not affect much as far as their labour market is concerned, but it does have the sociological dimension in terms of participation of a particular religion in the technical realm of medical services.

Table 5.13: Reasons for Selecting Medicine as Career

Reasons for Choosing Medicine as Career	Male	Female	Total
Family aspirations	26.5	10.6	19.5
Own aspiration to become a doctor	13.6	16.1	11.5
Social Service/Welfare	4.5	2.2	2.8
Good reputation of being a doctor in the society	24.3	22.2	22.2
Good earning possibilities/Salary	26.6	23.7	25.5
Prospect of getting good marriage partner	4.5	25.2	18.5
Total	100	100	100

India. Except in the very liberal families, upper and middle class Indian women generally avoided male doctors and sought the services of women doctors (Bhadra, 2011).

This case study revealed that most of the male and female physicians are from Hindu religion followed by Islam. The reason for this is again sought within the realm of historically analysed colonial roots.[6]

It has been noticed on a wide scale in literature about the job choices of prospective students, even within a particular cadre like health workers (Ramani et al., 2013). Monetary measures especially the gross salary level has been pronounced as a major factor for choosing a particular career. This has got the substantial empirical evidence in its favour however, non-monetary aspects have also emerged along with these analytical frameworks and featured in respective utility functions of the job seeking individuals. It always posed a challenge for incorporating non-monetary benefits into the overall wage function (Duncan, 1976). Sometime they are considered as a part of overall monetary benefits (various allowances, fringe benefits, incentives for better performance etc.) while many of them require separate categorisation (like job satisfaction, career progression, leisure time etc).

In table 5.13, the major reasons for choosing medicine as career are listed in terms of their preferences. For female doctors, it is basically social factors like getting a good marriage partner (which is reported at 25.2 %) and owning a good reputation in the society (which is 22.2 %) featured significantly apart from the monetary benefits like good earning possibility or salary. On the other hand, male doctors are more enticed by the salary and the aspects of family aspirations. A male doctor opined that-

"In Indian society, this is a well-accepted reality that males are better off in terms of marriage prospects even if he is not employed in a prestigious occupation like medicine. Social recognition along with better economic gains is more suited for their aspirations. Apart from the familial expectations, their own preference plays an important factor while looking for a career in medicine."

On the other hand, one female doctor have narrated that-

"Being a female in Indian society has different dimensions for choosing a job. We are supposed to choose a job, which can make our family to bring best bridegroom in an easy

[6] During colonial era, and even after that, Hindus had mostly dominated the realm of technical education including medical education. West Bengal had emerged as a centre for medical education because first medical college was established there. Therefore elite Hindus had dominated the scenario of medical education. Muslims lagged behind because of their reluctance to join the modern education like medical science, engineering etc. For details, see Chandra, B. (1980). Colonialism, stages of colonialism and the colonial state. Journal of Contemporary Asia

manner. If a girl is an acclaimed doctor, working in a government hospital, then it becomes a prestigious issue for her family."

While looking for an association between medicine as a career and gender of the aspirant Chi-square test is used. Chi- square test is applied to fulfil two objectives while conducting the non-parametric tests. The one is to show whether any association exists or not between two variables and other one is goodness of fit. In this study, the purpose is to check the hypothesis as-

H_0 (Null Hypothesis): There is no association between career in medicine and gender of the aspirant.

The Alternate hypothesis is –

H_1: There exist an association between these two (refutation of null hypothesis).

There is strong association between medicine as career and gender, which is shown with the help of chi-square table 5.13, where the Pearson Chi square value is less than tabulated value of chi square at 1 % level of significance and at 5 degree of freedom. It leads to the rejection of the null hypothesis that there is no association between medicine as a choice of career and gender of the candidate. The secondary data of enrolment in degree courses of medicine (see chapter four) from MHRD probably support this association derived from primary observation of field. Females candidates have shown higher enrolment percentage as compared to male students in medical education. This has been already described in detail in chapter four.

Table 5.14: Chi-Square Test for Association between Career in Medicine and Gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.584	5	.001*
Likelihood Ratio	25.253	5	.000
Linear-by-Linear Association	13.443	1	.000

df* degree of freedom
* at 1% level of significance

A female doctor from the field expressed her opinion in a different way when asked about the medicine as a choice of career for girls -

"If you ask this question as why girls go for a career in medicine, either for a doctor, nurse or any other related field, you will most probably get this answer. For them peer pressure or being a renowned doctor is not a concern, but a good, established reputed social life is more important, which helps them in marriage market."

However these narratives convey more or less, the same inference. Eventually, it is society and family, which shape the decision to choose for a particular career for a particular gender.

In Indian context the role of gender impacts upon his career choice although it requires further analysis as up to extent this impact can be measured precisely, especially in case of medicine. Statistical data are so far analysed within the historical context of gender differentiation across the occupation, lacking a concrete empirical generalisation.

5.5.2 Pecuniary and Non-pecuniary Factors[7]

It has been observed in both empirical and theoretical literature that many factors tend to influence the supply of health workers especially physicians. Theoretical expositions suggest that in long run it is wage which equalises demand and supply of labour for any competitive market. If a person's real wage is increased, he will supply more labour because of the substitution effect between leisure and working hours. The other side can be interpreted as more increment in wage will make a person to demand for more leisure, which is known as income effect. Which factor has more weight is an empirical question depending upon the kind of work, preference of the worker and the context in which he has been working. However the market for physicians is quite different and carries special characteristics. In theoretical literature the specificities of physicians' market has been discussed on a wider scale.

In Indian case, government is entrusted with the task to provide the health care services and therefore recruitment of health workers including physicians. Government decides a particular wage level or pay band for retaining them in rural and urban regions. The wage bill also includes various allowances, monetary compensations to motivate them for supplying their services. On the other hand, a physician's individual utility function can have

[7] We could not find any literary evidence for demarcating between the terms "monetary" and "pecuniary" factors. Generally, "monetary" and "pecuniary" are used for identical interpretations. However, monetary factors may represent only the aspect related with money, i.e. remuneration. On the other hand, pecuniary factors has a wider connotation, as it may incorporate other aspects like allowances, compensations etc.

several components and not only the monetary factors. Although it is quite difficult to include the exhaustive list of all elements in an individual's objective function but to focus only on pecuniary aspects will provide skewed analysis of their working behaviour. In addition to pecuniary elements, job satisfaction, promotion, working conditions, job security, individual and social factors have been noticed to impact upon their working decisions in a particular setting. A worker may compare his utility derived from wages only or form other non-pecuniary aspects like job satisfaction or from the public welfare, depending upon his individual motivation and context. In this aspect, the micro-level variables become more important than the macro-level. Although the supply decision of physicians tend to be the outcome of both macro and micro level factors. In case of public sector, the analysis of non-pecuniary elements becomes more relevant, where the wages are usually fixed as per the level of job and can not be altered frequently, while the non-pecuniary aspects can be altered in short run (Scott et al., 2006). In case of geographical distribution and their preference to prefer a particular place or area, is the outcome of non-pecuniary factors, rather than being purely monetary one. This aspect of physicians' choice to locate themselves has been studied from the lens of supply side economics of the labour market, as they better explain their distributive decisions. Generally, it has been argued that highly competitive and lesser number of institutions are responsible for physicians' shortages (Friss, 1994) or in particular instances it is due to job dissatisfaction (Adhia, 2003). But many of the studies have assorted it to location of practice and emergence of large scale private practices (Buerhaus et al, 2000). Proclivity towards private practices or working for corporate hospital chains have been a reason for segmentation physicians' labour market. On the other hand, demand side factors like aging of population, changing epidemiological profiles along with growing burden of NCDs, have also contributed to their shortage (Buerhaus et al, 2000).

Within the neo-classical labour supply framework a person's own decision to accept the service conditions play an important role. It proposes that a limited amount of time is to be distributed between work and leisure. The decision to allocate time between work and leisure is a function of wage which he demands. Postulates of basic theory of labour supply derive its rationale from consumer behaviour whereby he or she is supposed to make a choice between consumption of more goods or leisure. This is required to understand those conditions under which a person decides to participate in labour market and other basic properties of labour supply curve. Although the basic model of labour supply has been modified and enhanced according to the other collective dimensions of decision making

process of an individual. But beyond the realm of neo-classical framework, other non-wage factors like familial environment, facilities at workplace, infrastructure which play an important role, are somewhat got comparatively less attention. Perhaps, the qualitative nature of these variables has posed the challenge for their abstract mathematical formulation in any model. The same can be asserted for the labour supply models for physicians.

We can categorise the supply decision of physician in the labour market on three assumptive models- a) Model with complete information b) Incomplete information and, c) Objectives besides their income. All these categories have one common factor - they all are based on exogenous factors which decide and influence the pricing mechanism, hence determine the availability of physician in the market. If we do not open private market for them, and make this assumption that they are employed in public sector only, which is the taken as a case in this study, then wage will not be the only factor which will influence their labour market and functioning in that. Living conditions, working environment, other non-economic factors like infrastructure and the quality of life in each area matter. The supply side dynamics will not be only affected by the factors like production of doctors from medical colleges, increased enrolment etc. but how they are distributed across the rural and urban sector and what are their own intrinsic preferences. This can be attributed to intrinsic preferences of the physician like proximity to family and friends etc. But the pressure of wages does exist which many of the times overcome the other non-pecuniary motives or preferences while working in any particular segment.

Diagram 5 (a)

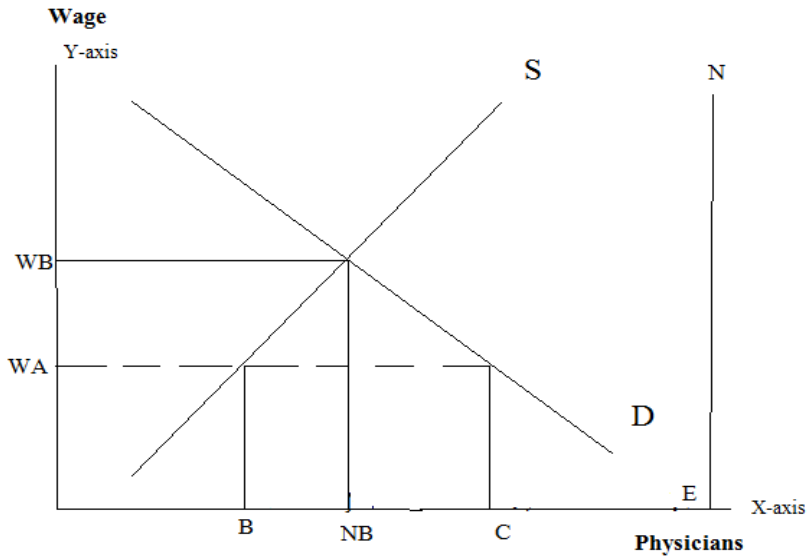
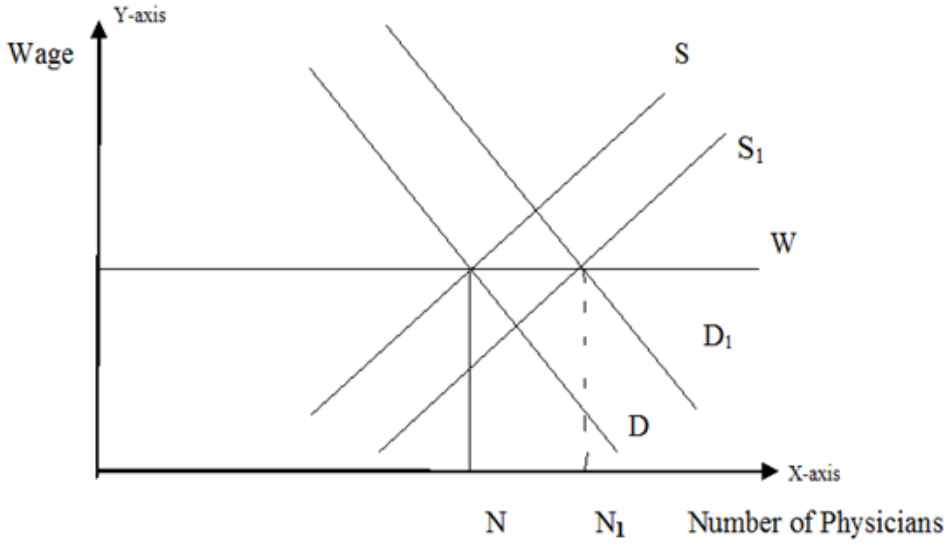


Diagram 5(a) shows the demand (D) and supply (S) of physician in a normal competitive market. WB is the wage level where demand and supply for physicians are in equilibrium. At this wage rate, NB physicians are employed. Suppose, if the wage is lower than the WB then the shortage will amount to BC. In other words, the demand for physicians is actually C, but supply is only B. This shortage will prevail till the wages are not raised to the level of WB. However, it is important to distinguish here that demand and supply model projected here is market based and not the actual need based, which may differ from the former. It has to be analysed that how is the market-based model different from the need for physicians.

Diagram 5 (a) shows the need based demand for physicians as line NE. It is a vertical line and does not change with the wage in the market. The number of physicians employed will still be NB but the need is E, so the needs-based shortage is E minus NB. It may be possible that need based demand become equal to market demand. In this scenario, the market-demand calculation and the needs-based calculation for the optimum number of nurses employed at the optimum wage would converge to produce the same result.

In case of government sector, which is depicted in diagram 5 (b), the wage rate is assumed to be fixed that is an elastic wage line, denoted by W. It has been further assumed that public sector has fixed this wage while incorporating the differences between the working conditions of rural and urban areas and also the hours worked by physicians. Physicians either working in the urban or rural area, have to accept the wage which is offered or fixed by the governing body. Conditions of dual market exist when government employed physicians prefer to go for private practices where wages are higher than the government defined wage W, as per the dual labour market theory.

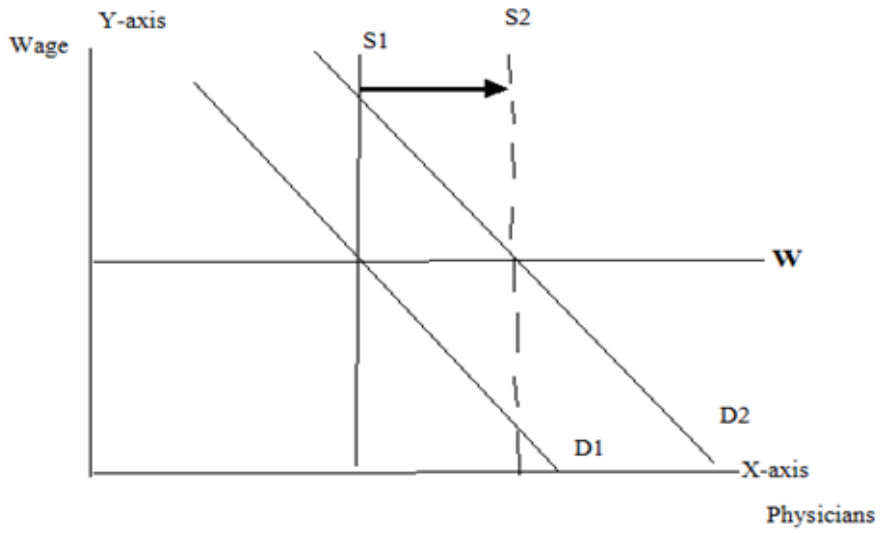
Diagram 5 (b): Demand and Supply Conditions in Government Sector



At the government controlled wage rate W, if supply has been increased to S_1 because of the increased demand D_1, then other factors need to be considered apart from the wages. It will also depend upon the elasticity of supply curve. For example in the figure below if the supply curve is assumed to be inelastic, then there will not be any effect of change of wages for the supply of labour.

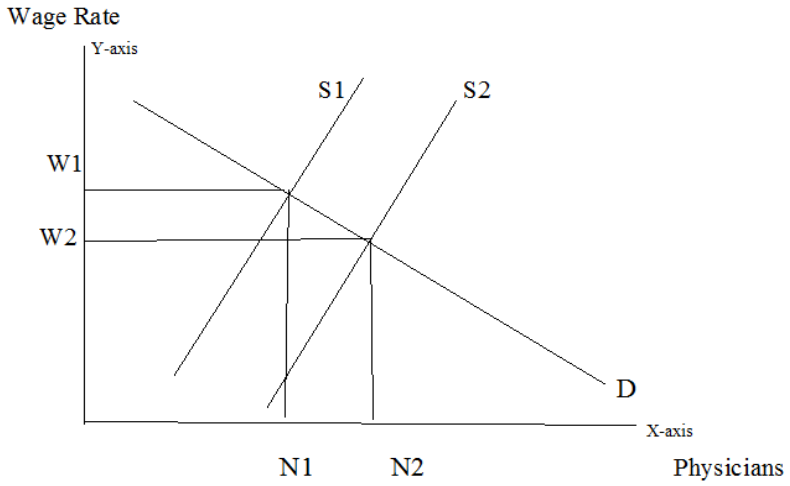
In the diagram 5 (c) the shift is caused by non-pecuniary factors as supply is not responsive to the wages.

Diagram 5 (c)



On the other hand, the case of private sector is different from the government sector. As depicted in the diagram 5 (d) given below, the market labour wage is W1 and the number of health workers hired is N1. Let us consider the possibility that health workers can also supply their labour to the public market, creating a "dual labour market". The wage W in diagram 5 (b) is set in a public market by the government and is fixed, so it produces a horizontal demand line, W. In the situation represented in diagram 5 (b), the public wage W is lower than

Diagram 5 (d)



than the private wage W1 in diagram 5 (d). Therefore, workers would offer their time first to the private sector until the W1 is equal to the wage in the public sector, W. At that point they often work their remaining hours in the public sector. In summary, N1 workers would be in the private sector and N2-N1 workers in the public sector. If workers worked in both sectors, they would give the minimum hours possible to the public sector at wage W and the remaining hours to the private sector at a wage W1, given that W1 exceeds W2.

Similarly the same rationale has been applied to physicians shifting their preference to work in rural and urban areas. The analysis is based on only factor of wage which shifts the preference of a health worker to work based on sectoral difference. If the wage rate in urban area exceeds from the government provided wage in rural area, the physician may prefer to go in urban area for private practices. This is depicted in diagram 5 (e) and 5(f) given below.

Diagram 5 (e)

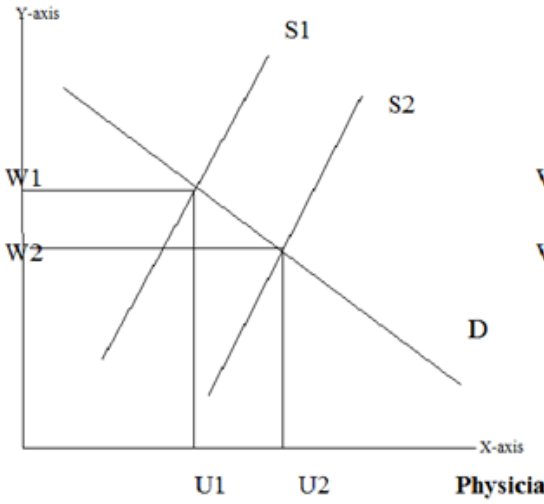
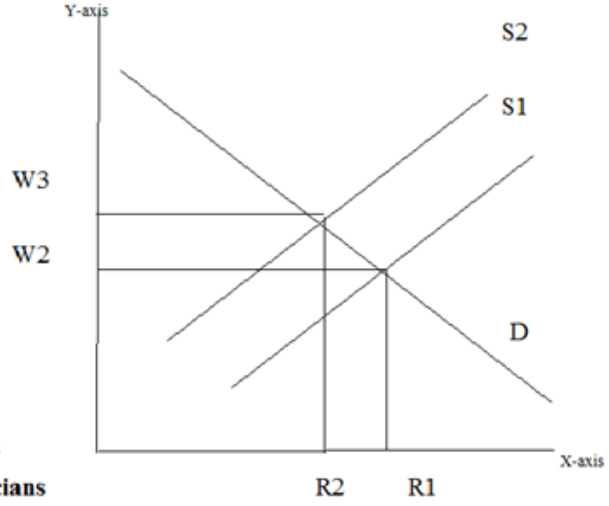


Diagram 5 (f)



In the diagram 5 (e) , it is observed that the supply and demand for health workers in an urban area produces a wage of W1 and employment of U1 workers. In rural areas (diagram 5f), the wage is W2. Since W1 exceeds W2, workers move from rural to urban areas, shifting the supply line from S1 to S2. However this is true for the public private divide of work preferences, and not within the government sector alone.

Another important aspect which requires discussion is about elasticity of labour supply curve which again depends upon several other factors. It has been argued that supply of labour is more elastic for low skilled job than the white collar jobs (Smith, 2003). High skilled jobs like of physicians requires long term training, therefore the supply of them can not change as quickly as of those jobs which require lesser training. For example, if the wages of doctors went up, there would be no great change in the number of doctors working because it takes a long time to get the training needed to be a doctor. Therefore the elasticity of labour supply curve of a physician tends to be less elastic than the jobs which has smaller or no training periods. Theoretically, in the long run supply of labour will tend to be more elastic. But, if health workers are not available then increment in real wage will not attract workers. Other factors which effect the elasticity of supply of physicians include barriers to entry in to this profession, limited availability of seats in medical institutions, high occupational mobility (both intra-regional and international) and other important non-pecuniary incentives. The backward bending labour supply curve for physicians may be

observed because of the fact that workload is an important non-pecuniary aspect for them, as their preference may depend upon the leisure over the increased wage rate. This is a factor which requires empirical overhauling.

Pecuniary Aspects

In the present study the pecuniary variables are categorised as wages/salary, pension/insurance, satisfying income compared to workload, monetary compensations in terms of different allowances like Dearance Allowance (DA), Travel Allowance (TA) and House Rent Allowance (HRA). Provision of other basic amenities like transport facilities, government schools for the children and better housing or other related facilities are subject to categorisation of both pecuniary and non-pecuniary domains (Ramani et al., 2013). Some researchers have clubbed them under non-pecuniary ones (Squires et al, 2016), while others have included them under non-pecuniary factors. It has been already discussed in this study (see table 5.13) that students invest in medical education out of the monetary gains apart from other non-pecuniary factors like reputation and their social aspirations, which corroborates the empirical and theoretical revelations of standard human capital framework. It further supports the fact that pecuniary aspects unarguably have the significant role to play while choosing a career in medicine. However, this dynamics get changed when doctors enter into the active labour force participation and choice of location to practice come into forefront. It impacts the labour supply of doctors in rural and urban areas because of the various factors which influences their decision to work. As one of the narrative from field described the working in government sector -

"No doubt, better pay scale is an important incentive, through which people want to come into medicine, but at the same time many other factor decide as to how and who remains into the government sector."

(A male doctor in urban area)

Respondents were asked about reasons for preferring government service, for which consistent salary and reputation in the society for being a doctor remained more pertinent in case of male doctors. For the female doctors, non-economic factors along with the reputation of being a doctor, were more important than the salary or wage. Non-economic factors included maternity leave, social prestige, job security, pension etc.

Table 5.15: Reasons for Preferring Government Service

Reasons for Preferring Gov. Service (%)			
Factors	Male	Female	Total
Consistent Salary	21.8	25.8	23.0
Reputation of being a doctor	25.8	23.3	22.5
Job Security	**23.3**	**29.3**	**26.0**
Pension and other Allowances + Facilities	29.1	21.6	28.5
Total	100	100	100

As visible in table 5.15, consistent and having a secure salary with other allowances has a major role to remain in government sector. Job security is another important aspect that featured while preferring for government sector. As per the literature review, where most of the studies are conducted on western countries, pecuniary aspects play an important role while shifting to private sector. But Indian context have a complicated scenario, as public private dichotomy is quite blurred. Physicians tend to prefer working in government sector but this willingness is subject to their own choice of location, i,e., either in rural or urban areas. It has been further observed in the field that physicians working in government establishments (hospitals, nursing homes, public undertakings like Navratnas, air force etc.) tend to remain in that sector instead of going to private practices or privately owned hospitals. On the other hand ,they prefer to move to the private sector if posted in rural areas. In some cases where they attained higher specialisation or greater experience, they try to move where they get maximum monetary benefits (here the dynamics of demand and supply of higher skills come to play the dominant role). This observation holds true for the government doctors in UP also. A male doctor from rural area opined that-

"Most of the young doctors want to practice with government hospitals primarily to gain experience and also recognition. After getting enough experience and carving a niche for themselves, they may tend to go for private practice, or sometime carry on both. Actually it happens in most of the cases."

5.5.3 Pecuniary Factors in Rural and Urban Areas

The basic pay structure in UP is at the same level for rurally or urbanely posted doctors. The grade pay and corresponding basic pay are same for the same level of qualification and post either in rural or urban area. The differences are observed in terms of

extra wage allowances like HRA and TA which is as per the guidelines mentioned in government pay rule gazette. The classification of cities where a doctor serves, is categorised as per Tier I, Tier II and Tier III structure devised by the government for all over India. Rural doctors are paid more in terms of TA as they have to visit remote areas. Below the tables depict the wage structure of physicians in public and private sectors.

Table 5.16 : Salary Details of Doctors (MBBS) Government Sector

Table: Physicians' Salary Structure in Central Government Employment(in Rs.)						
Exp. (Years)	Post/Degree/ Specialisation	Grade Pay	Fixed Pay	Employer's Contribution	Allowances	Total Salary (Gross)
0-3 years	Medical Officer(MBBS)	5400	55913	5991	9933	71837
5 years	Sr. Medical Officer	6600	68027	10,037	10,502	88,566
10 years	Chief Medical Officer	7600	81579	11,957	11,138	1,04,674
0-3 years	Specialist officer (MD/MS)	6600	67494	7149	11077	85721
5 years	Specialist officer (MD/MS)	7600	81153	11897	11718	1,04,768
10 years	Specialist officer (MD/MS)	8700	97368	14194	12479	1,24,041
Wage structure of Central Public Sector Employees (Maharatnas etc.)						
		Variable Pay	Fixed Pay	Employer's contribution	Allowances	Total (Gross)
Entry level	MBBS Doctor	830	58,515	15164	18,800	93,309
3 years	MBBS Doctor	970	68,385	17,722	21,971	10,90,47
5 years	MBBS Doctor	1371	77315	20036	24840	12,35,61
Entry level	MD/MS	970	68385	17722	21971	10,90,47
3 years	MD/MS	1097	77315	20036	24840	1,23,287
Salary details of MBBS doctors in Private Sector Organisations (k = thousand)						
Entry level	MBBS	1-1.5 k	27-30k	2-2.5k	NIL	30-34k
3 years	MBBS	2-3k	30-33k	3-4k	NIL	35-40k
5 years	MBBS	3-4k	34-40k	4-6k	NIL	40-50k
0-3 years	MD/MS	NA	NA	NA	NIL	80-90k

*Allowances include TA, DA and HRA

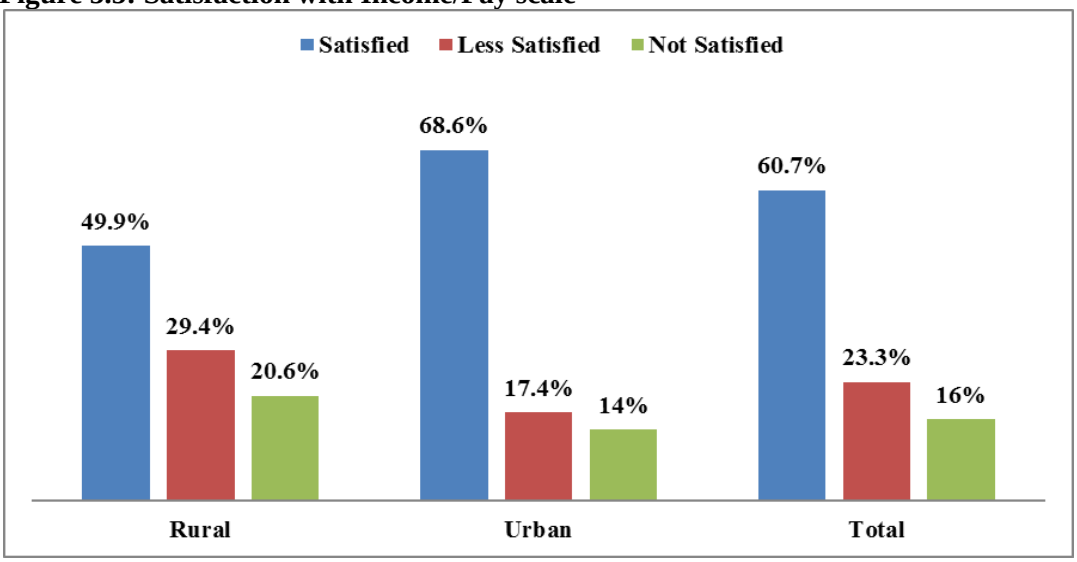
*Employers contribution includes pension and other benefits.

Next Table is about the pay structure of physicians and senior physicians in UP.

Table 5.17 : Pay Structure of Physicians in Uttar Pradesh (Rs.)						
Years	Post/Degree/Specialisation	Grade Pay	Fixed Pay	Allowances	Employer's contribution	Total (Gross) Salary
Entry Level	MBBS	5400	21000	11,145	4400	36,545
3-5 years	Medical Officer	6100	21700	19,955	5100	46,355
10 years	Chief Medical Officer	6600	22,200	25,530	11,400	59,130
0-3 years	Specialist (MD/MS)	6600	22,200	11,145	6149	39,494
5 years	Specialist (MD/MS)	7600	23,200	22,680	8149	54,029

Monetary conditions are almost same for rural and urban doctors because wages are decided by government, therefore the pay structure does not seem to create much difference in their preference to shift in a particular area, except the level of allowances.

Figure 5.5: Satisfaction with Income/Pay scale

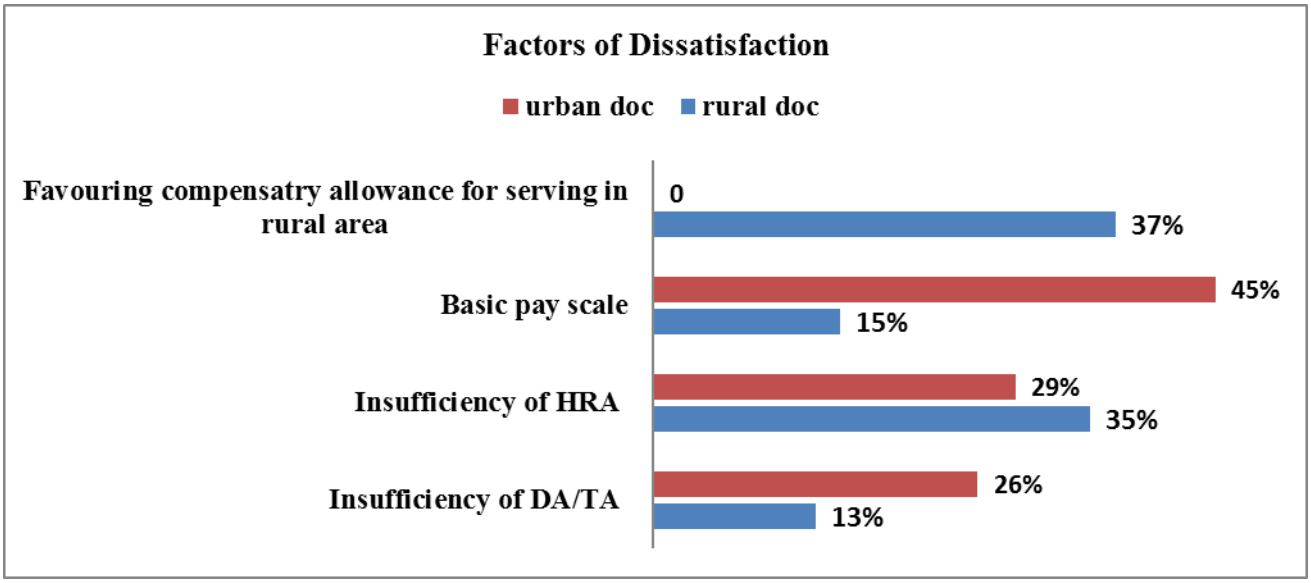


Observations gathered from the field regarding this aspect is presented in figure 5.5, whereby the wages or monthly salary has been taken as scale to measure the satisfaction with economic motivation associated with physician to work in government sector in rural and urban settings. It has been found that dissatisfaction with salary is more for rural doctors. This is probably due to the fact that rural doctors feel their working conditions are more demanding than their urban counterparts therefore requires higher salary. This can be observed in one of the narratives obtained in the field-

"We have been facing tougher situations than the urban employed doctors in many aspects. We require better salary and other compensatory benefits to motivate ourselves."

To analyse further,r figure 5.6 depicts that dissatisfaction is basically caused by the demand for more HRA and DA and TA in rural areas because of the higher opportunity cost paid by doctors for sacrificing their living in urban area or to be with their family. This has led to the application of concepts like compensating wage differential, however doctors were reluctant to reveal their preference for it. When asked, some of them wanted the non-pecuniary aspects to be improved rather than monetary compensations for that. In terms of substitution effect between income or wages and other non-pecuniary factors, the application of compensating wage differential requires further empirical investigation.

Figure 5.6 : Factors of Dissatisfaction within the Wage Structure of Physicians



Within the realm of dissatisfaction, urban doctors are more in favour enhancing the basic pay (45 %) structure that is, grade pay assigned for the salary structure followed by HRA (29%) and DA/TA. On the other hand, rural doctors are in favour of more compensatory allowance (37%) for serving in rural area followed by HRA (35 %). The latter aspect is more pronounced because of higher cost of housing in urban area while in rural area doctors prefer to rent in nearby town area instead of staying at government provided quarters. As one of the doctors quipped-

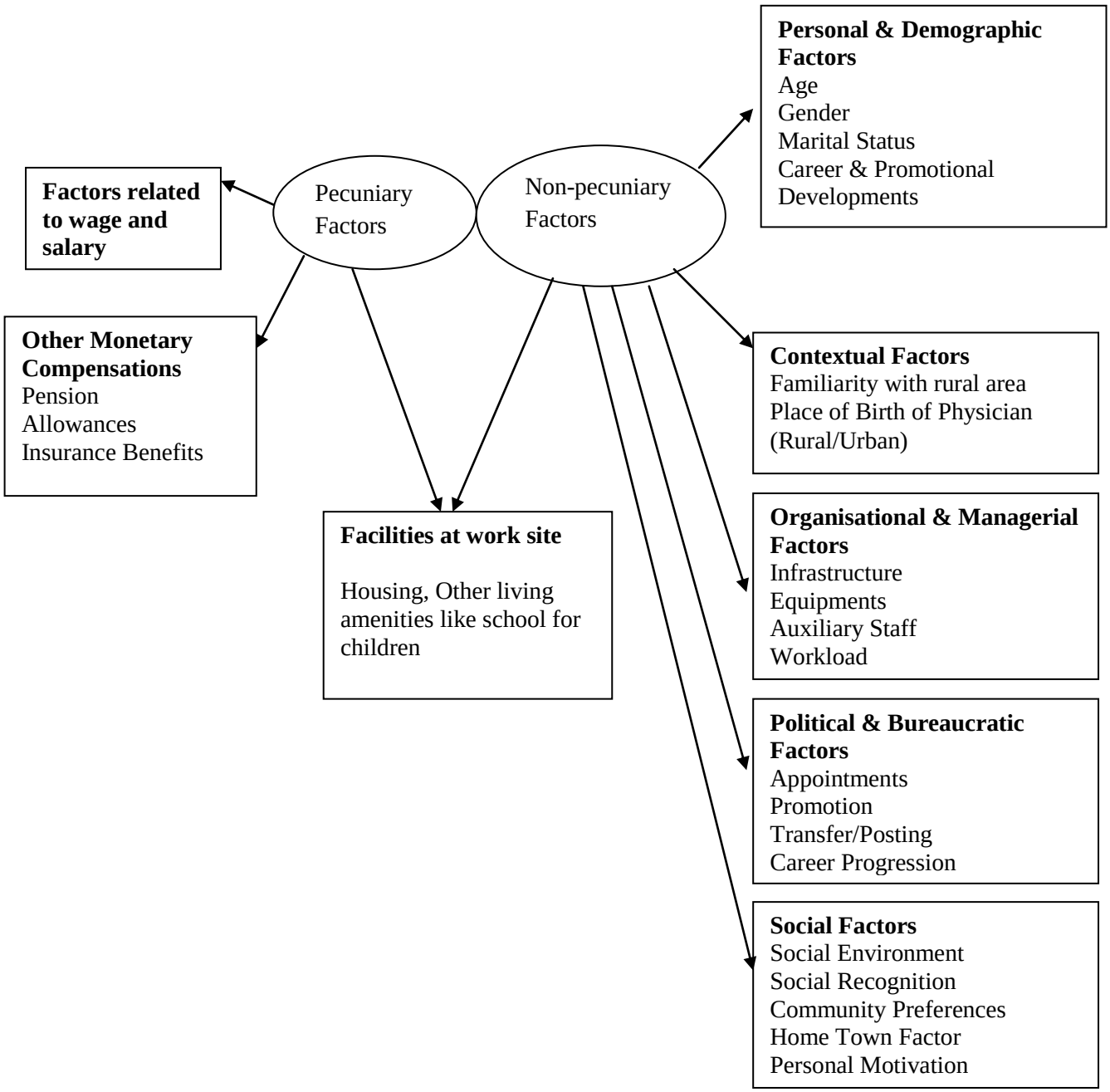
"*This is actually an important aspect for us. The other amenities like providing schools or nearby shopping centres are may not be very easy or either desirable all the time, but yes provision of average quarters for living is important. If government is constructing PHCs in*

remote and in interior areas, it should be followed by living facilities for health workers, so that we do not have to construct or arrange it for our own. We have to either rent it from somewhere far away from here or we have to get those repaired which is left for us."

5.5.4 Non-Pecuniary Factors

Non-pecuniary factors have a wide range to be categorised as single factor, therefore it can be clubbed under certain broad categories. It is quite difficult to categorise them in impervious compartments as many of the factors are overlapping and found to influence each other. In this study the basis of categorisation is derived from the responses of doctors based on emerging themes. These include demographic factors (age, marital Status, gender, familial factors like children etc.), social factors (recognition, welfare of the society etc.). Contextual factors (familiarity with rural area, birth place of doctors) organisational/ managerial factors (career development, promotion, infrastructure of hospital, staffs, medicine and equipments, work load). Figure 5.7 shows the thematic representation brought out from the study regarding a comprehensive categorisation of various non-pecuniary factors. It has to be seen that personal aspirations regarding career progression and professional development are not only the function of demographic or personal characteristics of an individual but also get affected by other category like political and bureaucratic factors.

Figure 5.7: Pecuniary and Non-pecuniary Factors Found in the Study



5.5.4.1 Demographic Factors

Within the categorisation of demographic factors, age, gender, marital status, familial factors like number of children etc. have featured. Although some of these factors like marital status, number of children, gender have been discussed within the realm of sociological concepts, hence it would be more apt to term them as socio-demographic characteristics rather than demographic or sociological alone. Even in theoretical discussions, any strict demarcation between these two terms has not been observed.

Figure 5.8: Age Distribution of Physicians

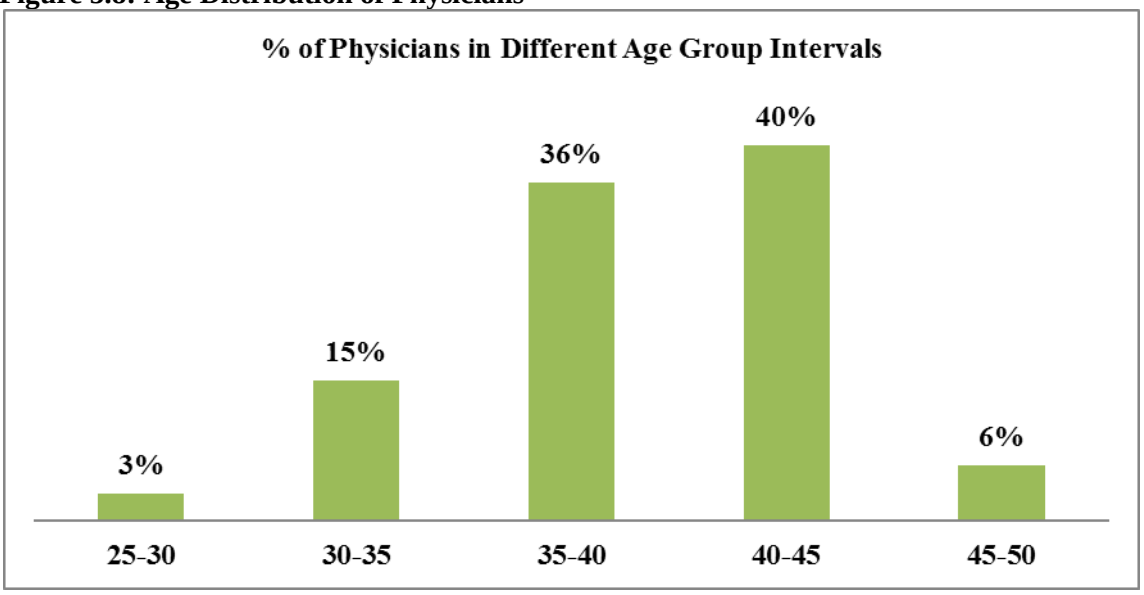
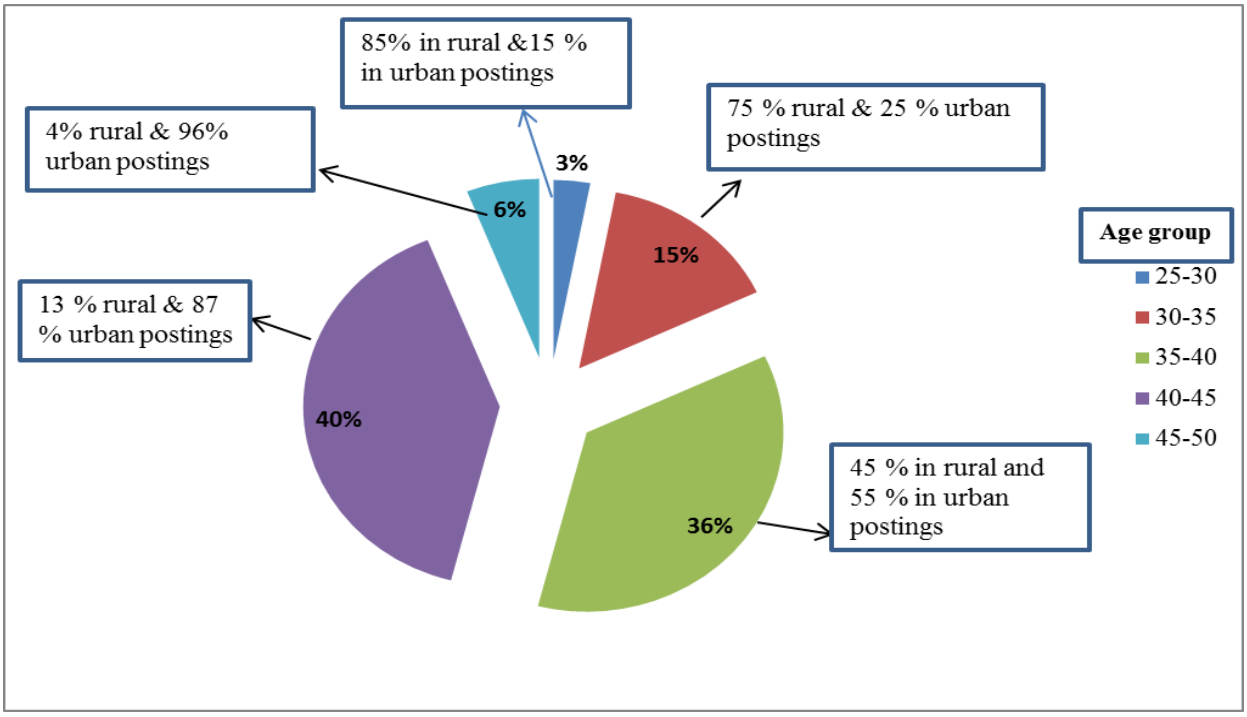


Figure 5.8 summarises distribution of doctors within different age group. It shows the average age group of physicians, whereby it has been found that maximum physicians' age fall within the range of 40-45 years followed by 30-35 years range. This has another implication to be inferred that investment in medical sector has longer period of capitalisation than the usual other streams like engineering or management. Also they require certain mandatory formalities before entering into their respective labour markets in the form of license and recruitment procedure by the government. Training period of doctors stretches to more than five years, which is basic minimum requirement to enter into practice (Bachelor of Medicine). This is not the case with other professions.

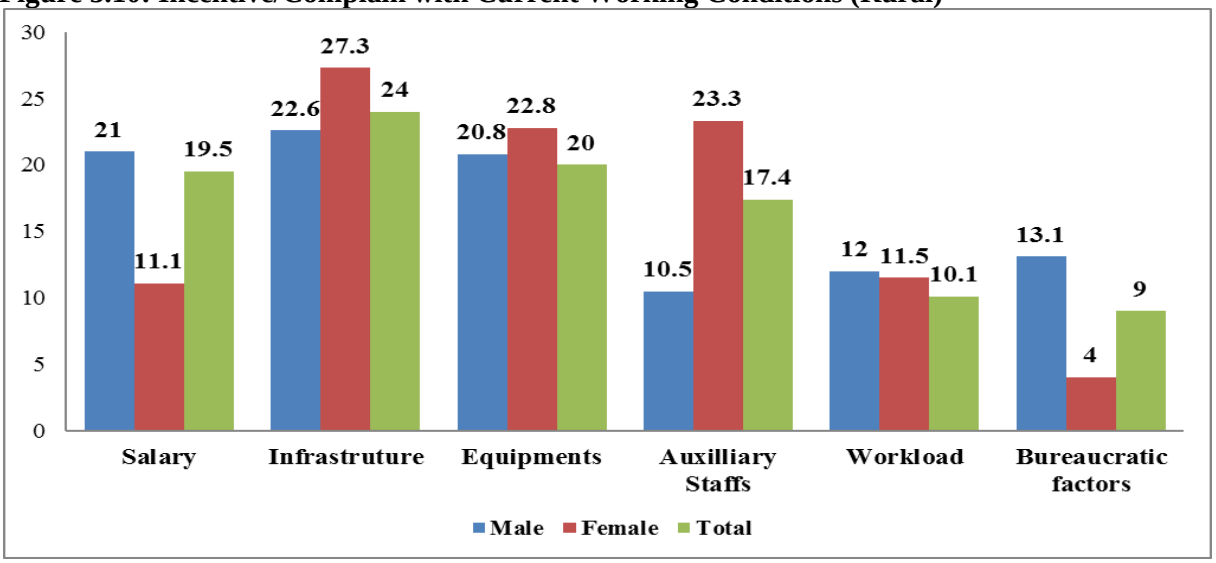
Furthermore in figure 5.9, it can be observed that more doctors from lower age group had been practising in rural areas rather than urban areas. As the difference in age group increases, the percentage gets shifted towards the urban area. This corroborates the initial findings that younger lot of government doctors have been practising in rural areas. Urban doctors have the opportunity to get further specialisation in terms of higher degree while continuing their practice. This is an important aspect emerged as non-pecuniary factor for doctors opting for urban settlement.

Figure 5.9: Association between Age Group and Practice Location



In terms of further demographic factors, it has been observed that gender of the practising doctors has different variables which affect their working conditions. Through figure 5.10, infrastructure, salary and equipments at working centre has emerged as major incentive for male doctors.

Figure 5.10: Incentive/Complain with Current Working Conditions (Rural)



For the females the same observation holds true including one more factor which is the availability of auxiliary staffs. One of the male doctors old that-

" Apart form many other things, availability of drugs and equipments are really important ones. While doing emergency operations, like caesarean which is a common operation, many times we have to arrange the drugs and equipments by ourselves. Government is not able to supply all these things in remote areas."

The frequency distribution table as presented in figure 5.10 depicts the gender wise categorisation of working conditions in rural area. Nonetheless the factors are basically managerial and organisational, but they vary as per the gender of the doctor. For example, female doctors are much concerned with infrastructure and auxiliary staffs while male doctors are more inclined towards the salary factor. In this aspect the economic motivation are quite different for both the genders.

Table 5.18: Chi-Square Test for Association between Gender and Working Conditions

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.366[a]	4	.020*
Likelihood Ratio	9.611	4	.048
Linear-by-Linear Association	1.584	1	.208

* At 5% level of significance
df= degree of freedom

The association between gender and working condition in rural area is further explained through the non-parametric chi square test by setting the null hypotheses that gender does not have any association for working conditions in any particular area. The result of the statistic is presented through table 5.18, whereby the association is found to be significant at 5 % level of confidence. Figure 5.10 explained the incentive in terms of effecting variables for working in rural area by gender. On the other hand, figure 5.11 explains about the major factors which motivate a doctor irrespective of their gender to work in urban setting.

5.5.4.2 Contextual Factors

Distance

The distance factor has been reflected as an important observation in terms of rural doctors, as shown in the table 5.19. This factor has to reflect in economic as well as non-economic observations because of the transportation cost and difficulty arises out of poor communication network in rural areas.

Table 5.19: Distance as a Factor for Physicians

Distance from Practice Location	Urban	Rural	Total
0-5 km	100	58.8	76.7
5-10 km	NIL	5.9	3.3
11-20 km	NIL	23.5	13.3
More than 20 km	NIL	11.8	6.7

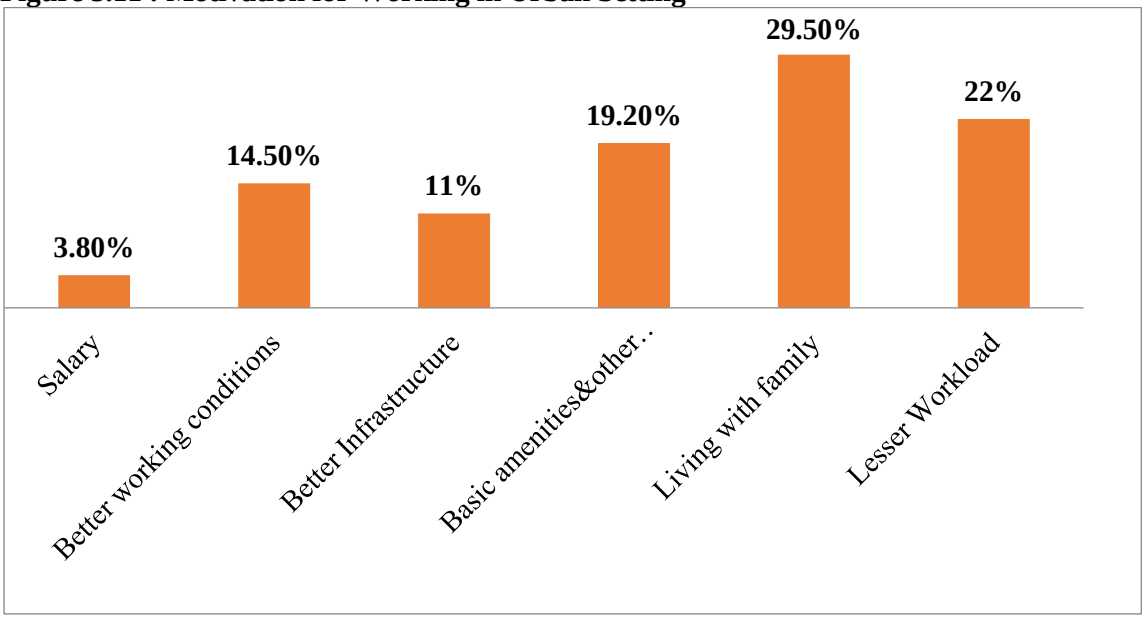
For 58.8 % of rural physicians, distance is important factor because of minimal linkages facilities, whereby some PHCs are even get cut off from the rest of the area during rainy seasons. This also affects the other important medical supplies like medicine, referral of patients etc., in these PHCs and eventually hamper the health services. Doctors posted in these areas have to face the cost of transportation and other difficulties, as one of them narrated-

" It is not only about distance, but because of poor connectivity we also don't have access to fresh produce for our daily lives along with supply of electricity and water."

Factors in Urban Context

Figure 5.11 is primarily to show those factors, which basically motivates doctors to work in urban area. Having family with themselves has emerged as major factor to work in urban area (29.5%), followed by lesser workload (22%). This is possibly due to fact that cities provide better facilities for health and education to their children and family members. In small town or village they could not get these facilities for their families and therefore resort them to urban areas.

Figure 5.11 : Motivation for Working in Urban Setting

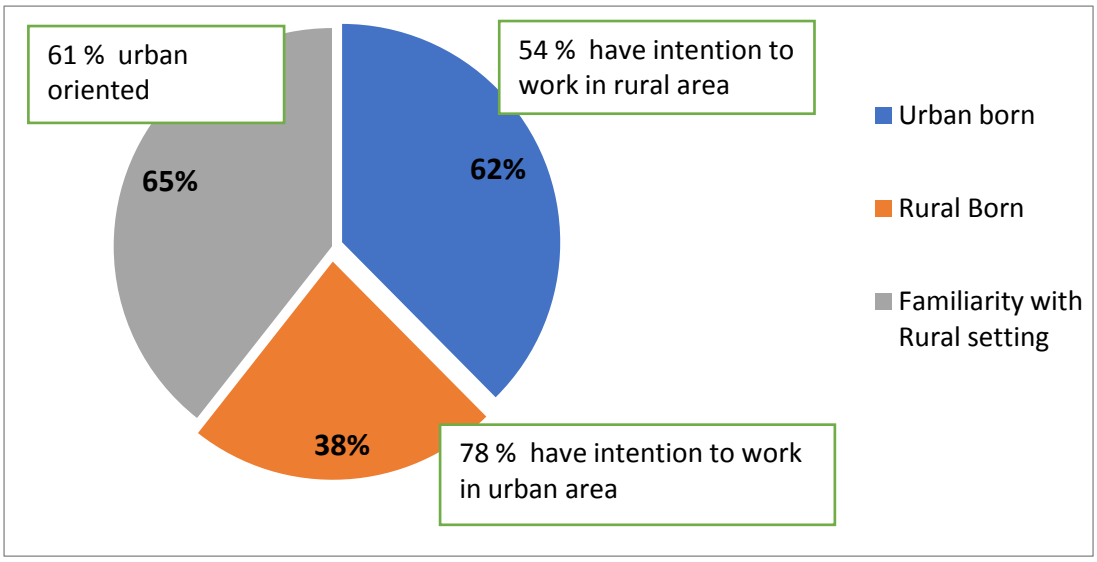


One of the respondents quoted as-

"*In terms of pay structure, there is no any marked difference until you are placed in Tier I cities which provide higher DA and HRA. Otherwise physicians especially the older lot prefer to live with their families. Urban areas have more facilities especially for the schooling of children, which is one of the reasons we prefer to keep our families in cities or metropolitan areas."*

Importantly, apart from the familial factors which influences physician's choice to opt for urban or rural area, it is the lesser workload in urban area which have emerged as one of the important factor which is most oftenly quoted by doctors to work in urban area.

Figure 5.12: Familiarity with Rural/Urban Area



Familiarity with rural and urban area and its association with their job preference are presented in figure 5.12. The interesting observation is about the preference of rural born doctors to work in urban area which accounted for 78 %. According to the standard economic theory of demonstration effect, it was expected that earnings make people to go for better living standard. Therefore, it can be applied here that a rural born person will tend to shift towards the urban area in search of better living pattern once he or she starts earning.

5.5.4.3 Organisational and Managerial Factors

Organisational and managerial factors involve those operating at micro level like degree or specialisation of the doctors in any particular area or many at macro level like existing working conditions. In this study, it is difficult to bracket the category in terms of micro and macro level distinction. Organisational and managerial factors are basically considered as macro level factors. But in this study, the specialisation of physicians is

categorised under managerial factor, which is predominantly a micro-level decision. But at the same time, speciality of a doctor plays an important role in terms of organisational structure of Indian health care system. The later aspect is related with the efficiency and demand for physicians' services.

Figure 5.13: Specialisation among Rural/Urban Doctors

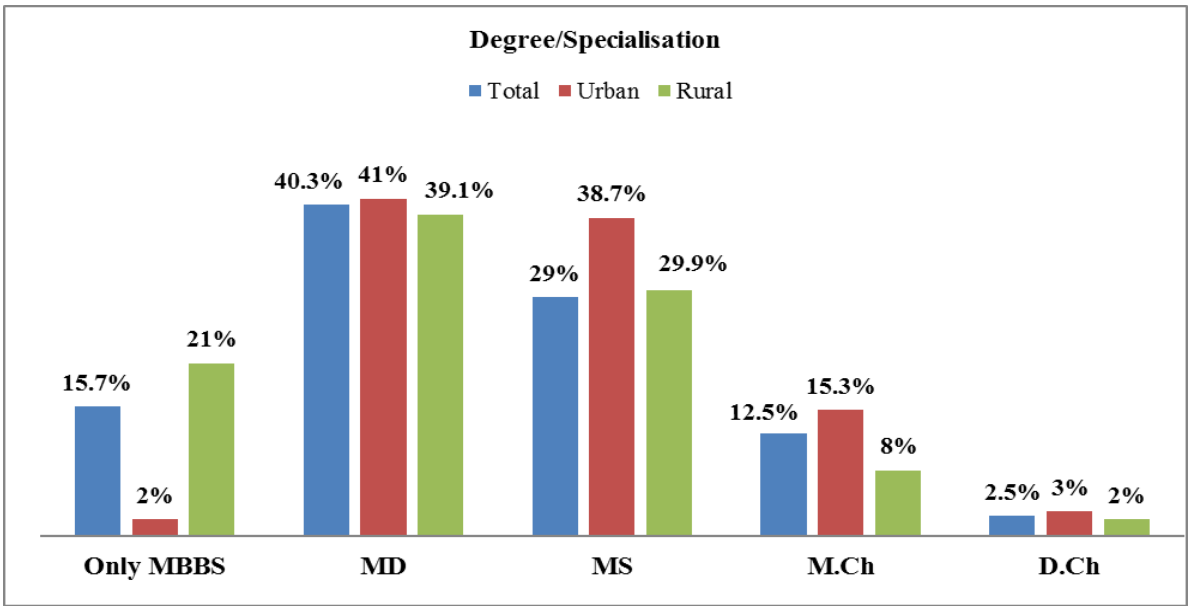


Figure 5.13 presents nature and further degree of specialisation among interviewed rural and urban doctors. It is general observation that most of the doctors in rural areas have not specialised beyond MD level (39.1 %), followed by MS level (29.9%). Interestingly, doctors at their initial level of joining, having MBBS degree, have to serve in rural areas. Those who continue there, might not get the chance to do further specialisation, but those who migrate to urban areas, prefer to opt for further specialisation and continue to stay there.

Figure 5.14: Factors Affecting the Working Condition in Rural Area (Aggregate %)

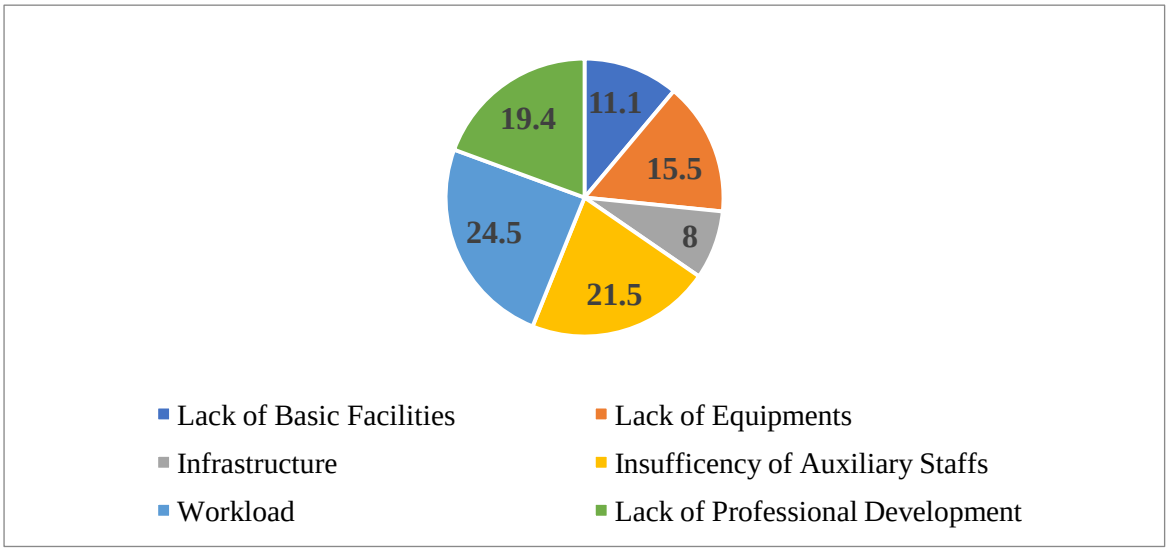
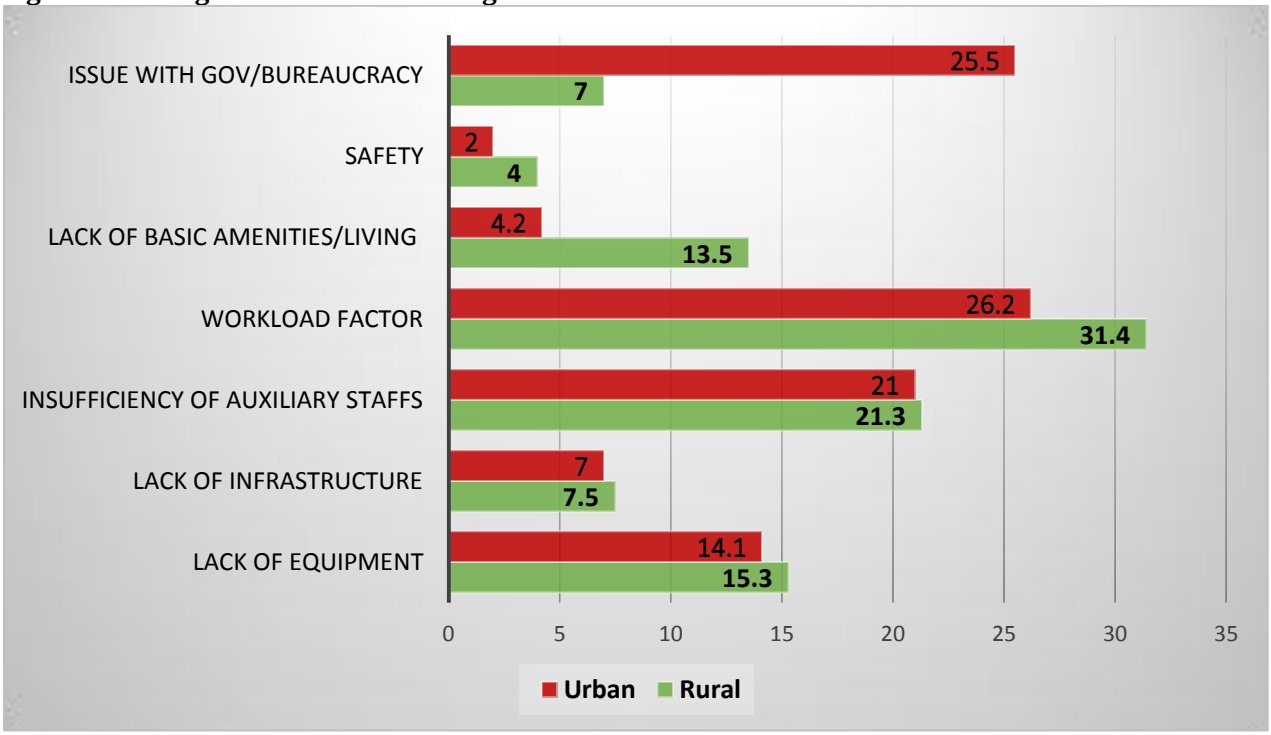


Figure 5.14 points out the observations whereby insufficiency of auxiliary staffs, workload and lack of professional development are found to be prominent factors for the de-motivation in working in rural areas or further decision to remain in rural service. From the figure, 24.5 % have reported for more workload in rural areas followed by insufficiency of auxiliary staffs (21.5%) and lack of professional development (19.4%). Furthermore, working in urban area provides them the opportunity such as schooling for their children and the opportunity for both spouses to work and live in the same location. As one of the doctors said-

"Lack of accommodation is also one of the factors which government should take care of. Doctors want facilities for their families where they can live with them and do not need to go each and every time to visit them in urban areas or wherever they reside."

Figure 5.15 presents a comparison between the rural and urban doctors for some organisational and managerial factors. Issue of governance in terms of bureaucracy is more pronounced for urban doctors while for rural doctors workload factors are more prominent. This observation is somewhat contrary to the propositions of WHO and World Bank sponsored studies, which argues that in rural areas the demand for health services is lower. They argued that lower demand is due to lower purchasing power of health services out of the poverty, information asymmetry, utilisation of services form quacks and local doctors etc. However higher workload indicates that rural people tend to utilise health services, if provided at affordable cost.

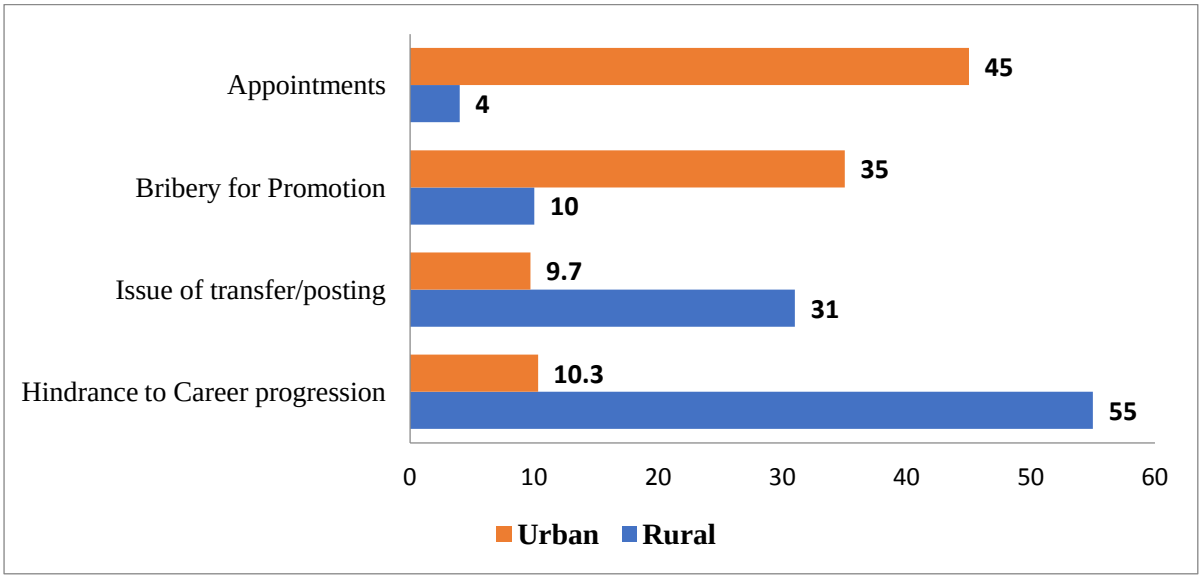
Figure 5.15: Organisational and Managerial Factors in Rural and Urban Doctors



5.5.4.4 Political and Bureaucratic Factors

Although it can be placed within the macro level domain of institutional factors as it builds up under the vast administrative and political structure of the country. It has been already discussed in chapter four that at the level of production of doctors, the establishment and functioning of medical colleges in India in general, and in UP particular has been facing corrupt practices and rent seeking behaviour. These factors not only impact the level of production of doctors, but also get imbedded into the whole process of delivering health care effectively by the health workers at the ground level. In the labour market of doctors, their preference and mode of working are found to be impacted by the governance in terms of bureaucracy and hierarchy in appointments, promotion and transfer at their preferred area.

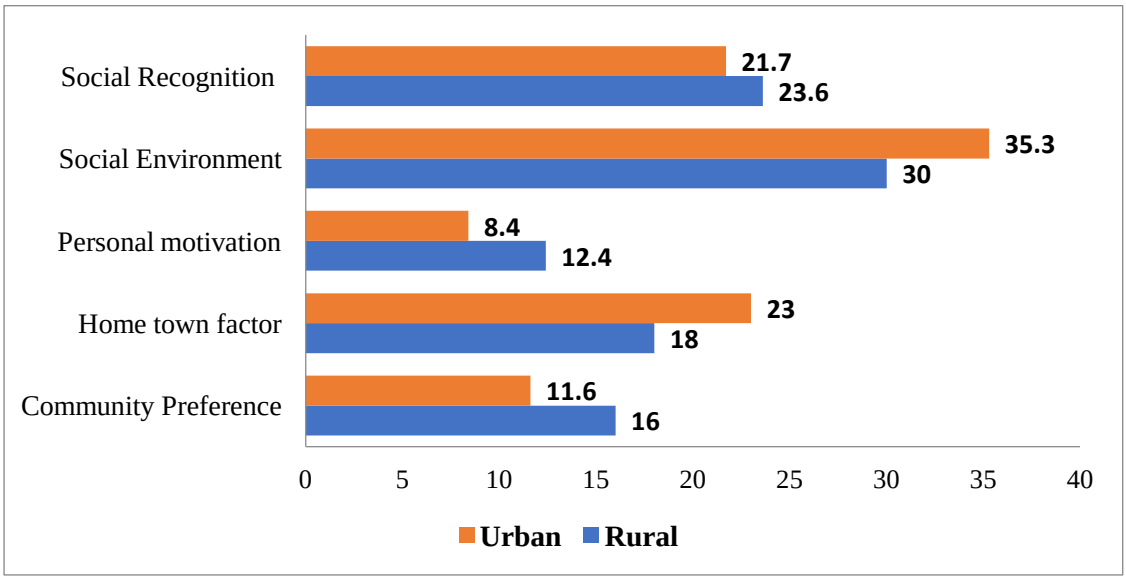
Figure 5.16: Political & Bureaucratic Factors



5.5.4.5 Social Factors

Social factors are in fact related with the demographic profile of the doctor, as it was discussed in the earlier sections. Although some distinguished factors have reflected from the field observation, whereby it has been found that social environment has found a major place for urban doctors while looking for their practice area (figure 5.17). Most of the empirical literature have not mentioned about the prevalence of social factors in terms of social environment. Studies have mostly focussed upon demographic factors in terms of gender, marital status or age. In this study the social environment is related to the behaviour and living pattern of residing communities around an individual physician.

Figure 5.17: Prevalence of Social Factors



Social recognition and social environment have featured as prominent factors for rural doctors also. Therefore, it can be inferred that social factors play important role in influencing the choices of doctors for selecting their practice location.

Chapter Six:

International Migration and Supply of Physicians in India

Chapter Six: International Migration and Supply of Physicians in India

6.1 Introduction

It has been argued in the literature that there is dearth of research in labour market for physicians, especially in developing and Less Developed Countries (LDCs) and specifically in context of India. In previous chapters, this observation has been highlighted as research gap. Another research gap is about the exploration of International migration of physicians from India in terms of its impact on existing stock and supply of physicians and their internal distribution. This chapter is to cater the fourth objective of the study which is to trace the general trend and pattern of migration of physicians from India and to further look into its inter-linkage with their supply, if any.

A substantial lot of literature have researched and analysed about the unequal distribution of physicians in rural and urban areas and its threat to achieve the universal access to health care, especially in underserved pockets. However, the impact of magnitude of international migration on overall supply pattern of these valuable HRH has not been estimated yet, perhaps because of persistent data constraint. Available literature is more or less revolves around two major objectives related to the market of health care *per se,* and not any specific type of health worker.[1] These two objectives include (a) shortfall in production and distribution of health workers within internal market and (b) International migration of health works across the globe (Nair & Webster, 2013).

This chapter argues that without considering international migration as one of the significant variable for the supply side issues of physicians, the analysis of their labour market will remain incomplete and also stagnant. In Indian context, this becomes more contingent to discuss the international migration of high skilled health workers because India is among the league of countries who supplies maximum numbers of its trained doctors and nurses to abroad. Observation from the extant literature on migration of health professional indicates that, push and pull factors have dominated migration theories. While explaining the

[1] As per the definition by WHO, person who is involved in enhancing the health condition of the population, is considered as health worker. Therefore it is a broader term which includes all levels of skilled health workers including doctors and nurses (WHO, 2006). This study is concerned with physicians only, therefore throughout the study the term is usually in connection with physicians.

labour market conditions at home and destination countries, demand and supply happen to be a function of wage differential of health workers. Although the dynamics of health care market at destination countries have been considered as significant factor for attracting health professionals but the supply side factors require more exploration. This is because of the emerging global political space that has been shaping up the supply system of the host countries across the world. Global political economy (henceforth GPE) can provide a framework to develop the new insights in labour market of migrating health professionals especially high skilled health workers like physicians. Medical education system in sending countries like India or Philippines have been aligning themselves to the global demand and thus making migration tendencies more linked towards the educational investment (Walton-Roberts, 2015). This inter-linkage needs to be explored apart from the already incumbent perspectives of push- pull factors and larger ambit of macroeconomic framework of brain drain and brain gain debate. This is an established fact that human capital is one of the most essential resources for a health system in any country. These highly qualified health professionals, and in particular doctors, are subject to numerous qualitative and quantitative regulatory measures to insure the quality, equity and sustainability of health care delivery (Moullan & Bourgueil, 2014). Pattern and characteristics of international migration of physicians may provide useful insights to understand and explain the labour market of physicians at home country including India.

Various International Organisations like WHO have mentioned and analysed the global and country shortages in health workforce (Taylor & Dhillon, 2011). India is among those countries which has been major supplier of HRH while having imbalances in their own requirement and distribution, especially for physicians (Nair & Webster, 2013). Bundred & Levitt (2000) argued that developed countries find it easier to recruit medical graduates from developing countries as a solution to their demand of medical care. On the other hand, better financial conditions in developed countries entice these fresh medical students from developing countries. This kind of high skilled emigration puts further pressure on remaining doctors and auxiliary staff to meet the need of the population as well as to train future medical graduates. Stilwell et al., (2004) further argued that although physicians and nurses do not present very high proportion of high skilled workforce who moves to foreign destinations, but it may percolate as loss in valuable HRH for developing countries. This will further hamper the capacity of health care system in latter countries to provide equitable health care to their citizens.

Brein & Gostin (2011) produced a report which observed that the world has been experiencing a critical and growing shortage of health workers particularly in poor countries. As per this report, around sixty million health personnel are there throughout the globe but their distribution is quite skewed. WHO in its various publications have asserted the fact that mostly the LMICs and poor countries experience larger shortages because of their larger need than the developed countries. In poorer countries the existing number of health workers is not sufficient to meet their needs. Poor countries have the double coincidence of diseases in terms of curative as well as preventive. The burden of communicable and non-communicable diseases makes their requirement of health workers more pronounced than the developed nations (WHO, 2013). Although it is not only the LMICs or poor countries which demand for more health workers but developed, middle or high income-countries have been also coping up with their faltering supply. As WHO is more concerned about the countries of sub-Saharan Africa, because of the fact that they bear the 24 % of world's total disease burden and possess only 3 % of total global health workforce while having scarcest in financial resources. Interestingly, India is also among those 57 countries who are in the list of critical human resource shortages (WHO, 2006). Therefore, shortages and imbalances of medical personnel have been looked as an international problem rather than only restricting it to the regional or at any particular country level (Mullan et al, 1995). Zurn et al., (2002) observed the reason of this imbalance in supply and demand of required skill at any existing market situation. But again the argument is about these required skills are ultimately embedded in health workers which are produced by a country's medical education system. Labour market for any particular occupational skill may fluctuate given the conditions of that country's demand for health care and disease burden, not taking population as the only factor (Driouchi, 2014).

With this emerging globalised level of health worker's migration, adequate and accurate data for their stock and flow is hard to gather. Whatever information is available is either of poor quality (Mills et al., 2011) and of little reliability or even in the form anecdotes and narratives or as personal experiences (Aluttis et al., 2014). This problem is further aggravated by the incoherency in definition of migrant health worker's status in destination country (whether they are permanent or temporary migrants). Therefore scarcity of reliable data source and the lack of sequential registration in both destination and host countries pose difficulty in drawing an accurate account of health workers' migration patterns (Aluttis et al., 2014).

Indian case is distinct from other countries because of the larger magnitude of emigration of medical graduates. In terms of medical education, India has the credit of having one of the largest system of medical colleges, either in public or private sector. In the recent times, private medical colleges have been proliferating faster than the government colleges, which show not only the demand for physicians but also the demand of medicine from the student as a prestigious and financially secure career option. The global health care dynamics has further made medicine as one of the most promising career abroad, so providing comparatively easier mobility to them with respect to other disciplines. Foreign countries who recruit physicians from India, find a comparative advantage in comparison to other source countries in terms of language proximity. This aspect is also enjoyed by the Indian medical graduates who aspire to go abroad. Emerging global political economy has even led to respective governments and India to sign various short term MoUs for providing physicians, although on short term basis. For example, India has signed bilateral agreements with some Middle East countries and also with UK for 'sustainable recruitment and employment' of her health care professionals. India has partnerships with many of the EU countries in terms of mobility of labour (Hazarika et al., 2011). On the contrary, India, who has in its credit the largest number of medical cadre in terms of production, has been suffering from skewed and uneven distribution in various states and rural regions (Hazarika, 2013). India's goal to achieve universal health coverage by the end of 2020 seems to be a distant objective, and inadequacy and uneven distribution of health workers are supposed to be one of the impediments in it.

Given this background, and while picking up the fact that supply of important HRH like physicians and nurses constitute an important input to the labour market for health professionals, this chapter is focussed on the exploration of migration of physicians from India and its various dimensions on the theoretical and empirical front as well. This chapter attempts to forge a link between international migration of physicians from India and their availability at home country.

6.2 Migration of Physicians from LDCs and Developing Countries: Trend and Pattern

International movement of physicians from various developing and less developed countries (LDCs) has not been a general exodus but rather a movement from limited numbers of countries. Asian countries such as Hong Kong, India, Pakistan, Philippines, Korea and Thailand accounted for most of the physicians who move to the USA. Ghana also faces the serious problem of migration of physicians to the Germany. The United States, UK and

Canada are receiving a gift from developing nations a large cadre of trained persons whose education was expensive to the developing countries, and who contribute critically important medical services to the population of developed countries. As Khadria (2002) argued that migration of physicians and nurses have always contributed to the major share in international migration of 'Human Resources in Science and Technology' (HRST).

Literature encompassing various researches have analysed the reasons and impact of this phenomenon of high skilled labour movement while discussing about the migration of health personnel.

For the sake of simplicity migration is generally considered to be a voluntary movement by any individual to look for a better employment opportunity or to altogether find an employment itself. It may be internal i.e., within a country from one region to another or from one state to another or it may beome international in its character. Coinage of term like 'brain drain' is used to explain the phenomenon whereby high skilled professionals or persons cross the international boundary for providing their services abroad. Physicians are one of the high skilled professionals who prefer to move abroad or even within the country from one sector to other (public to private) or from one area to another (rural to urban) given the domain of existing economic, social or political factors. Migrant network systems have contributed to the easier movement of skilled health personnel. After 1990s, the advent of modern communication techniques in terms of technology upgradation, have made people better informed about existing opportunities at offshore destinations.

If the latest global figures are taken into account regarding their migration, the OECD countries have shown a 60 % increment in receiving physicians and nurses from foreign destinations since 2004. As per the dataset of IOM (International Organisation for Migration), it has been approximated that around 20,000 African natives trained at various capacities and in different professions including health personnel, leave their country to developed countries of heavy industrialisation (WHO, 2004). This trend of migration presents a general observation regarding the increment in migration of health personnel to OECD countries. Furthermore, countries from Asian continent emerged as one of the leading suppliers of physicians and nurses. There is increasing trend of mobility within OECD countries itself because of the various bilateral agreements and growing intra-EEA (European Economic Area) flows. It has been inferred from the OECD datasets that share of foreign trained doctors in 23 OECD countries (out of 35) have grown from 19.5 % to around 22 % during the period 2000-01 to 2010-11. This also holds true for nurses whereby their percentage grown from 11 to 14.5 % in 22 countries of OECD.

Further datasets from OECD confirms that, alone in OECD countries the foreign doctors and nurses constituted around 5 % of overall health personnel across the world for the year 2010-11. Physicians and nurses from foreign countries have further constituted around 17 % and 6 % respectively in 26 OECD countries during the period of 2012-14. Another point to be observed is, throughout the available datasets for different years, the percentage of doctors had been higher than the nurses, which corroborates the fact that highly skilled physicians are more in demand than the comparatively lower skilled nurses. Also, these migrating health personnel belong to those source countries which face acute shortages of health workers. Table 6.1 can be referred which presents the percentage constitution by the foreign trained physicians in some select OECD countries, where significant flow of trained doctors has been noticed.

Table 6.1: Percentage of Foreign Trained Doctors in OECD Countries

Year / Country	2000	2005	2010	2011	2012	2013
Australia	NA	NA	NA	NA	32	30
Austria	NA	NA	3.6	3.9	4	4
Belgium	4.3	5	8	9	10	10
Canada	21	21	23	23	23	23
Czech Republic	1.3	3.7	4	4.7	5	2.7
Denmark	4.4	6	5.8	5.7	5.6	NA
Estonia	NA	0.3	1.4	1.7	2	2.4
Finland	NA	NA	20.9	18.9	19.9	NA
France	3.9	5.5	7.5	8.2	8.7	9
Germany	3.7	5	6.5	7	8	9
Hungary	NA	7.7	7.7	7	7	7.5
Ireland	NA	NA	NA	35.6	32.7	34
Israel	64	62	59	59	59	58.5
Netherlands	NA	2	2.6	2.6	NA	NA
New Zealand	40	41	43.6	43	43.5	43.5
Norway	NA	NA	33.8	34.6	35.5	36
Poland	NA	NA	2	1.8	1.8	NA
Slovak Republic	NA	NA	2.63	2.994	NA	NA
Slovenia	NA	NA	10.66	12	14	14.4
Spain	NA	NA	NA	9.4	NA	NA
Sweden	14	18.4	23	24	24.3	NA
Switzerland	NA	NA	24	25	27	NA
Turkey	0.06	0.22	0.21	0.21	0.2	0.2
United Kingdom	NA	NA	30	29	28.7	28
United States	NA	NA	24.8	24.7	24.8	25

Source : *OECD Statistics (2015)*

New Zealand, Israel, Norway, Sweden, UK & the US have been showing significant percentage.

From the table 6.1, it is noticeable that trend of foreign trained physicians have been different for different destination countries. In USA, for the last twenty years, the share of foreign doctors has shown an increasing trend although not by substantive margin (Mullan, 2005). The same can be inferred for the UK, but this increment is relatively smaller as per the data. On the other hand, the share of foreign trained doctors has gone down considerably for countries like Canada and Australia. These elaborations are basically in terms of flow, while in terms of stock, the developing nations are still the main stock holders in developed countries in terms of physicians (Vujicic et al., 2004). For example, African doctors constitute around 20% of total stock of doctors in UK. Similarly, in the USA 30 % of total stock of foreign doctors are from India and Pakistan. Canadian health care has 10 % of their doctors from South Arica and around one third is from the UK (OECD, 2015).

The so called rising southern economies (RSEs) are the main supplier for physicians to most of the developed nations. Table 6.2 shows the number of physicians from RSE's in Canada for the period 2000-2013. It is clear from the table that among the other countries of RSEs, India has shown the maximum increase in sending her doctors to Canada during the mentioned period.

Table 6.2: Physicians from RSE's (Rising Southern Economies) in Canada from 2000-2013

Year	Brazil	China	India	Mexico	Russian Federation	South Africa
2000	13	23	92	7	16	100
2001	24	39	114	10	21	206
2002	22	21	137	7	17	206
2003	19	36	125	11	17	131
2004	23	39	182	15	34	79
2005	26	35	165	7	20	122
2006	34	43	169	15	23	99
2007	32	44	208	21	35	105
2008	37	49	223	18	33	108
2009	48	57	267	18	49	143
2010	34	50	169	16	34	106
2011	42	35	187	28	25	66
2012	30	41	215	16	24	85
2013	41	40	229	23	25	72

Source: OECD Stat, 2015

On the other hand, number from South Africa have shown declining trend, as during 2001-2002 it was around 206, while in 2013 it came down to 72 doctors. India recorded to 229 doctors in 2013, while in the year 2000, it was 92 doctors. It substantiates the fact that

India has emerged a global market in supplying physicians in comparison to its other counterparts.

Table 6.3: Physicians from RSE's (Rising Southern Economies) in US from 2002-2013

Year	Brazil	China	India	Mexico	Russian Federation	South Africa
2002	37	226	1526	176	152	15
2003	49	192	1707	181	130	18
2004	44	212	1771	186	120	14
2005	52	223	1778	180	104	18
2006	58	279	1748	152	121	10
2007	61	230	1828	168	81	10
2008	58	259	1844	159	78	18
2009	52	226	1868	160	101	4
2010	58	226	1519	153	63	8
2011	47	192	1434	140	57	9
2012	37	198	1251	140	46	9
2013	36	160	966	140	35	1
CAGR	0.002	0.029	0.039	0.019	0.13	0.25

Source: OECD Stat, 2015

Another table 6.3 shows the doctors from RSEs to the United States for the period 2002-2013. Here again, India tops the list with significant margin with respect to other countries in the table. Its compound annual growth rate (CAGR) stands highest among the other countries at 0.039 for the period 2002-2013. Second highest is of China, followed by South Africa. Although, India registered a decline in terms of absolute number, from the year 2012 to 2013, that is, in 2012 the number of doctors in US from India was 1251, while in 2013 it came down to 966. Restrictive immigration policy of US might have influenced this movement.

In theoretical literature, a universal theory to explain this phenomenon of health workers migration has not been established because this category is distinct form of migration from other category of high skilled migration. Changing nature of medical knowledge, aspirations of medical students and its newly emerging subsidiary disciplines has led to the different constructs in the area of international migration of health personnel apart from the conventional analytical framework of brain gain and brain drain. Emergence of new skills like Geriatrics, Clinical Psychology and other discipline related to old age disabilities have provided a new space to those medical professionals' migration, who are expert in these fields. Interestingly, prospective health workers have started orienting their skills to the

emergence of this demand of new disciplines abroad, which perhaps can not be explained from the hindsight of pull and push factors.

6.3 Migration of Physicians from India: Trend & Pattern

Within the context of labour migration, undoubtedly India has been the most dynamic country. With an overseas Indian community estimated at 25 million, India holds the second largest Diaspora in the world (GoI, 2010). This Diaspora is a composite mixture of unskilled, skilled and high skilled workers. Within the category of highly skilled workers, it is estimated that a large proportion is composed of health care workers. As discussed in previous sections and in tables 6.2 and 6.3 about the potential supplier of physicians to developed world, India has remained a major source country for supplying these high skilled HRH including nurses. Because of the language coordination with the western developed world, India has been one of the prominent suppliers of physicians and nurses to USA, Canada, the UK, Australia and many other countries. However, there has been always discerning voices among researchers and policy makers about the scarcity of reliable data for migration of physicians or about the prospective migrants who are on the roll to move.

Table 6.4: Annual Inflow of Indian-Trained Doctors in Select OECD Countries and Compound Annual Growth Rate

Year	Canada	New Zealand	United Kingdom	United States
2000	92	50	2015	NA
2001	114	43	1698	NA
2002	137	58	1890	1526
2003	125	46	2979	1707
2004	182	51	3641	1771
2005	165	65	2918	1778
2006	169	64	1180	1748
2007	208	91	684	1828
2008	223	59	594	1844
2009	267	60	506	1868
2010	169	47	608	1519
2011	187	59	491	1434
2012	215	50	373	1251
2013	229	54	342	966
2014	NA	37	416	NA
CAGR	0.072668	0.005938	-0.12753	0.046786

Source: OECD stat (2015)

Also, there is lack of further analysis on impact of migration of these valuable HRH on source country's health care system (Hazarika et al., 2011)

Potnuru (2016) in his paper pointed out that there is only 4.8 doctors per 10,000 population available for practice in India in 2014, as against the belief of availability of 7 doctors per 10,000 people. Rest of the registered doctors have either retired or migrated to foreign to practice there. It is estimated that the country would be able to achieve a ratio of about 6.9 practicing doctors per 10,000 people only by 2030 (Potnuru, 2016), as per the current rate of production.

Table 6.4 shows a general trend of annual inflow of Indian trained physicians to some prominent OECD countries, from the period 2000 to 2014. From this data, the compound annual growth rate (CAGR) have been calculated for this time period, whereby this rate is positive for Canada and US, and then to the New Zealand. For United Kingdom, the CAGR is negative with -0.12, as number of emigrating physicians to UK has come down from the year 2000 to 2014. Among the most probable reasons, it has been argued that the recent drop in their numbers is mainly due to visa restrictions.[2] There could be further reasons like, of late there has been surge in the movement of health professionals within the Europe. Doctors and other health worker have been moving among the European countries like from Denmark Sweden to UK or elsewhere. Nevertheless, Britain has been considered as historic and first choice for Indian medical graduates for acquiring further qualification like post graduate degree or other specialisation and also to get themselves working in Britain's NHS. Perhaps this might be a reason that their movement starting from 1950s, gained pace during 1970s and continued till 2000s.

[2] Because of the old colonial linkages with Britain Indian health workers especially physicians and their work has been preferred by UK and Indian doctors too favoured it as preferred destination. But drop in registration with GMC (General Medical Council) is generally seen because of visa restrictions from many of the European countries including Britain (Hindustan Times, 29 February, 2016).

Table 6.5: Annual Inflows of Indian-trained Nurses in Select OECD Countries

Country	Canada	Ireland	Italy	United Kingdom
2000	40	NA	4	NA
2001	78	NA	13	NA
2002	75	110	31	NA
2003	101	240	34	1830
2004	124	579	67	3073
2005	190	1634	54	3690
2006	167	2037	55	3551
2007	128	1868	86	2436
2008	108	295	133	1020
2009	209	71	151	78
2010	221	13	232	153
2011	208	NA	273	408
2012	268	NA	179	330
2013	452	NA	86	261
2014	NA	NA	49	236

Source: OECD Stat (2015).

Table 6.5 is to show another important component of HRH, i.e., about the movement of nurses in select OECD countries. Almost the same trend can be observed in case of nurses, as their number in UK has come down across the years from 2000 to 2014. Making comparison with physicians, later is more preferred in OECD countries, while nurses are more prone to flying to Middle East and countries like Australia, as their working destinations.

Table 6.6: Stock of Indian Medical Doctors Practicing Abroad by Host Country, 2013-14

Host Country	Numbers
Australia	3,981
Canada	1,943
Germany	177
Ireland	430
New Zealand	468
Norway	36
UK	*25,116
USA	**48,337
Other OECD Countries	49
Gulf countries	10,000
Total	90,537

Source: * GMC, UK. & OECD Stat (2015)

On the other hand, the data from General Medical Council of UK (GMC) in table 6.6 shows that not only in the UK and USA, but of late gulf countries have also emerged as a favourable labour market for Indian physicians to move because of the higher wage rate.

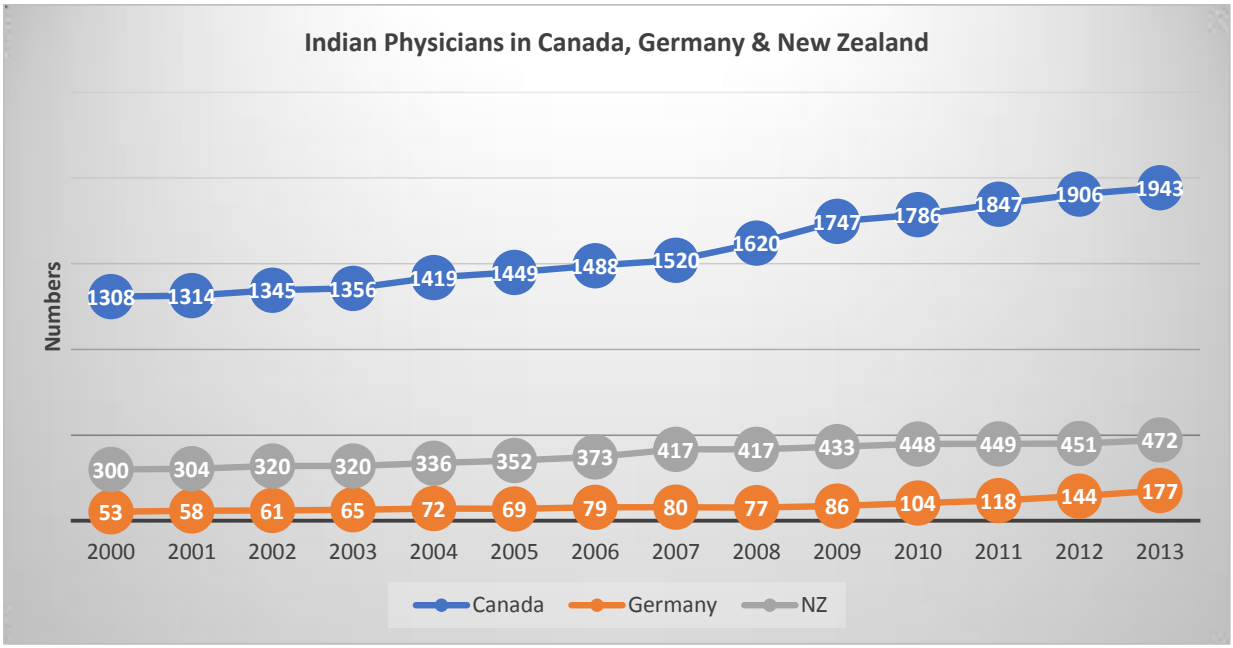
Table 6.7: Stock of Indian Doctors in Select Foreign Countries from 2000-2014 & Compound Annual Growth Rate

Year	Canada	Germany	New Zealand
2000	1308	53	300
2001	1314	58	304
2002	1345	61	320
2003	1356	65	320
2004	1419	72	336
2005	1449	69	352
2006	1488	79	373
2007	1520	80	417
2008	1620	77	417
2009	1747	86	433
2010	1786	104	448
2011	1847	118	449
2012	1906	144	451
2013	1943	177	472
2014	NA	NA	468
CAGR	0.02867	0.089951	0.032901

Source: OECD Stat (2015)

Through table 6.7, it is observed that Indian physicians have slightly shifted their focus towards other European countries like Germany, and even more towards Canada and South Oceania like New Zealand. Canada has emerged as another favourite destination for them to move. Among other OECD countries, New Zealand has a more stable economy, with lower rate of cost of living and also the immigration policies are quite stable as compared to other OECD counterparts. Of late, it has emerged as among the top 20 educational hubs in developed nations, therefore providing good opportunities for prospective migrants.

Figure 6.1: Indians Physicians in Canada, Germany & New Zealand



Source: Compiled from OECD Stat (2015)

Policymakers, particularly those in the United States have been targeted for importing brain gain from source countries and accumulating human capital. The United States remained dominant in the realm of immigration statistics since Americans did most of the early analysis on migration. Concerns about brain drain were heightened when the United States abandoned the national quotas enacted in the 1920's and changed its immigration laws in 1965 from one of discrimination, based mainly on national origins to one of discrimination based on skill. As a result, brain-drain statistics almost immediately reflected an increased number of 'talented persons' entering the country- migration of the educated and migration for education (Myers, 1972). Consequently, policy-makers throughout the world asked for several recommendations for moderating the immigration of talent to the United States (for detailed discussion see, Bhagwati 1976; Chiswick 1982; Oommen 1989).

Table 6.8: Indian Doctors in UK and US by Stock

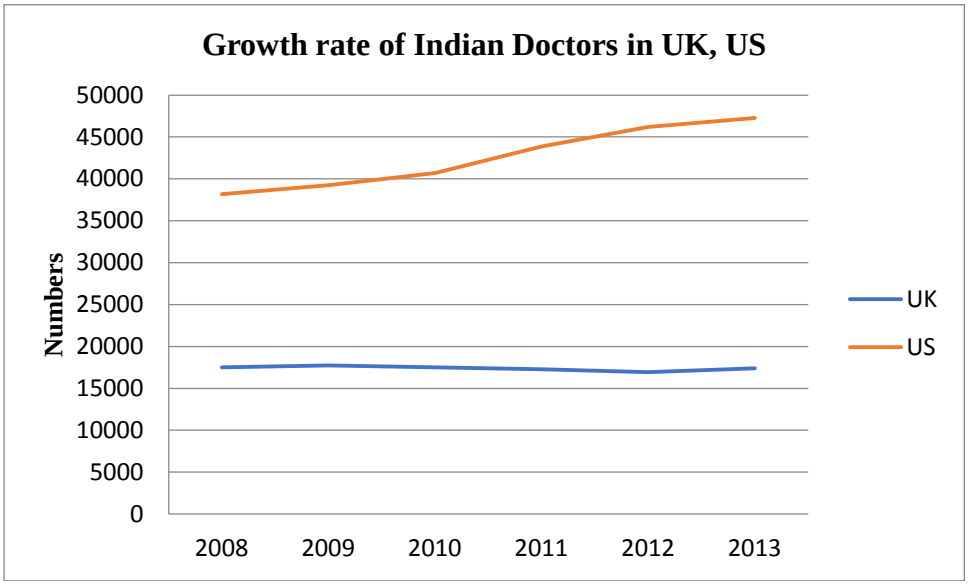
Year	UK	US
2008	17503	38178
2009	17738	39258
2010	17517	40711
2011	17285	43885
2012	16941	46212
2013	17378	47271

Source: OECD Stat (2015)

Data pertaining to Indian physicians in US and UK present this difference of their labour market, comparatively. During 2008 to 2012, numbers of Indian physicians in UK more or less remained constant or declined after 2012, despite of the old colonial ties and linguistic proximity. This becomes clear by observing the figure 6.2 which shows the growth rate of Indian physicians in the UK and in the US. From this figure, the trend line for the UK shows a constant path, while for the US, it has been showing an increasing trend over the period of 2000 to 2013.

Policy makers and researchers have analysed these different trends in terms of planning of health workforce requirement in UK. As per Hagopian et al., (2004) UK has adopted a formal 'code of practice' which in future will restrict NHS stakeholders to employ health personnel from developing or LMICs countries. This has been devised to consider the global equity debates for the distribution of health workers across the globe. In response to these efforts by the UK, the British Medical Journal and the Lancet (two most significant medical journals) have published editorials and research articles over the issue of brain drain from LMICs and developing countries and thereby endorsed for an international code of ethics for controlling the recruitment of health personnel from later countries (Lancet, 2000; Pang, 2002). Although not much have been achieved to reduce the recruitment of nurses from developing countries but there has been a decline in physicians' movement to UK (Buchan & Dovlo, 2004). Perhaps, the growing care economy in UK requires nurses more than the doctors, because of the ageing population. Also, UK has a well structured and centralized health care system which can address these issues, while countries like USA does not have UK type of health care system and also reluctant to hamper the market driven free mobility of health professionals. In spite of their tough medical licensing examinations and other related immigration procedure, US is still considered as more congenial towards doctors' migration (Hagopian et al., 2004).

Figure: 6.2: Growth Rate of Indian Physicians in United Kingdom & United States



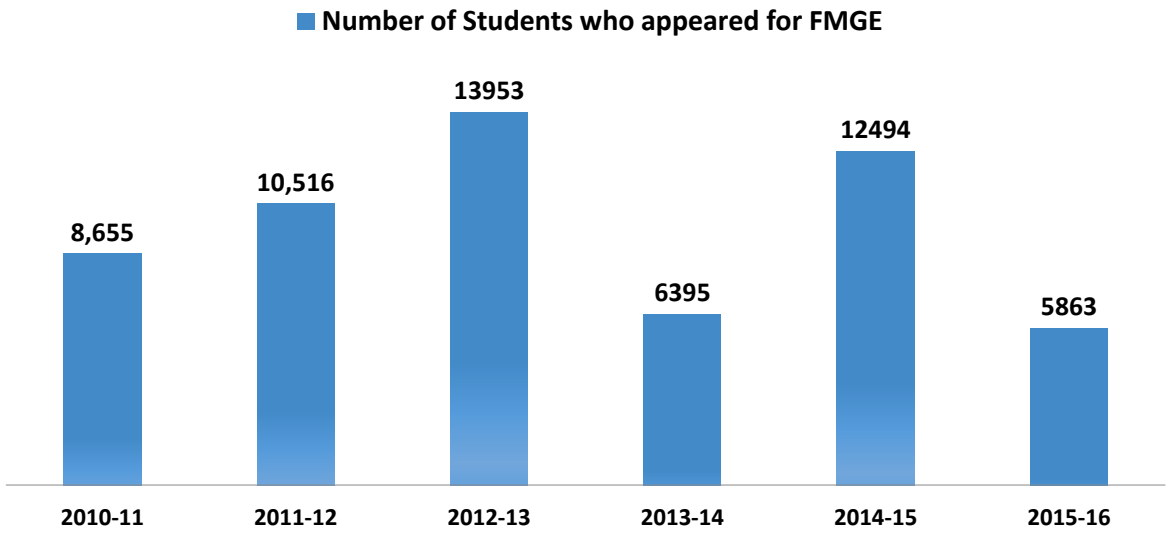
Source: OECD Stat (2015)

Bhattacharjee (2013) conducted a study for Indian physicians and their mobility pattern to Scandinavian and Nordic countries by culling out the facts for Denmark, Sweden, Norway and The Netherlands. In this study, it has been observed that although these countries have been experiencing in demand for more doctors but their immigration policies are more restrictive for third world countries rather than their European counterparts.

6.3.1 Inflow of Foreign Trained Physicians in India

A recent pattern in this area is observed whereby physicians want to practice in India after attaining their medical degree from abroad. In this regard, concrete data set is not available with the Indian government except those candidates who apply for National Board of Examination (NBE). Physicians who obtained their MBBS or further specialisation from abroad, have to take up the Foreign Medical Graduate Examination (FMGE) which is conducted by NBE twice in a year. It has been mandated by the section 13 (4A) of the IMC Act, 1956 (amended in 2002) as statutory requirement to pass this examination before starting their practice in India.

Fig 6.3 : Number of Students appeared for FMGE from 2012-11 to 2015-16



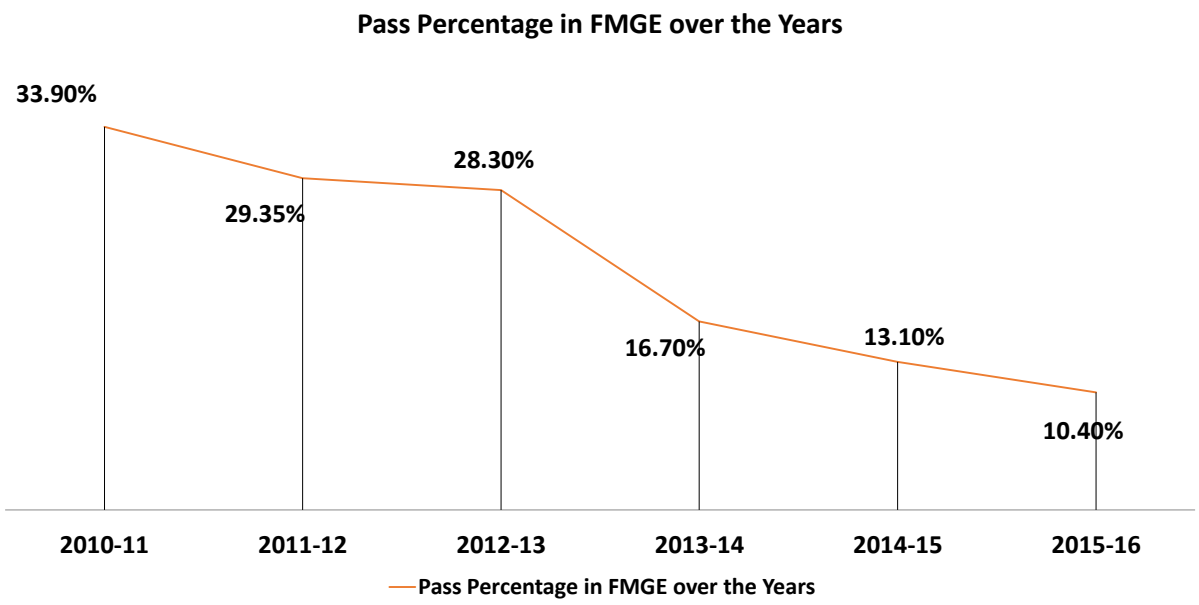
Source: RTI (2016)

Candidates who attained their degrees from countries like US, UK, Australia, Canada and New Zealand need not to take up the FMGE exam for starting their practice in India. The data obtained through RTI filed in NBE and also at MCI has been presented in the figure 6.3, 6.4 and 6.5.

In figure 6.3, the data is projected to show the number of students who appeared for FMGE since June 2010 to June 2016. The number has shown a fluctuating trend during these years. The possible reasons are attributed to the level of difficulty of this exam. Candidates have to appear several times for clearing the exam nonetheless it is conducted twice in a year. For example, during 2014-15 the number was higher at 12494, but during next session of 2015-16 it came down to 5863, because many of the earlier students have cleared the exam. On the other hand, the reverse have been observed during 2010-11, whereby the number of appearing candidates were 8655 and went up to 10,516 during the next session of 2011-12, because of adding up of the new aspirants to the earlier ones.

The other important reason for this fluctuating trend is because of very low success rate in the exam, many aspirants leave it, while new entrants try their luck.

Fig 6.4: Pass Percentage in FMGE from 2010-11 to 2015-16

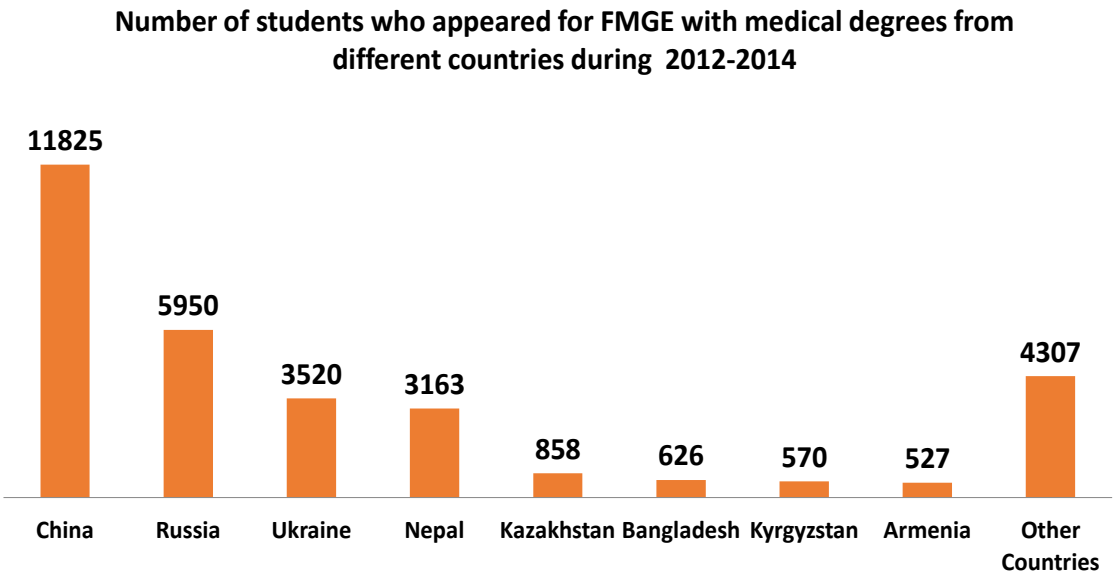


Source: RTI (2016)

The pass percentage of aspirants is shown in figure 6.4. This has been continuously falling down since 2010-11 onwards. The exam has become tougher in terms of standard of questions throughout the years. The level is above the post graduate medical examination (PGME) held by AIIMS, which makes it difficult for the aspirants holding the MBBS degree from other countries, to crack the exam in at least one or two attempts.

The NBE and MCI have cited the reasons for the difficult parameters of exam on the basis of quality of medical education in foreign countries excluding UK, US, Australia, New Zealand and Canada. This is because of the fact that most of the foreign medical graduate comes from China, Russia, Ukraine and Nepal followed by other countries. This has been substantiated by the figure 6.5. China tops the rank with 11,825 Indian students, followed by Russia with 5950 students during the period of 2012-14. The popularity of China and Russia is primarily economic, as the cost of education is quite lower than the private medical colleges in India.

Fig 6.5: Students Appeared for FMGE from some Select Countries (2012-14)



Source: RTI (2016)

Now the government is mooting the idea to allow Foreign Medical Graduates to practice in India without taking up the FMGE. The Ministry of Health and Family Welfare has proposed this to the MCI in consonance with the proposal by ministry of Law and Justice (3rd December, 2016, The Indian Express). It has to be noted that earlier foreign medical graduates were allowed to practice without taking up FMGE but after 2002, it became statutory to clear the exam to get the license for practice and further doing specialisation in India. Now again the government wants to bring back the earlier procedure of not making FMGE mandatory to tackle the shortage of physicians in India.

6.4 Major Epochs in Theoretical Debates for International Migration of Physicians from India

Researches in global health care have always been positioned towards the issue of recruiting health personnel from developing to developed world along with their own voluntary movement. Public policy debates for this kind of mobility and recruitment of high skilled health workers are not recent. Western countries have revised their policy of immigration for high skilled people, since the mid 1960s. High skilled physicians trained at the cost of domestic resources have always catered the surging demand of western heath care

system and also to solve their existing shortages. This aspect of high skilled health care professionals' migration from India to western world, has been pronounced in various policy forums from time to time.

Theoretical debates pertaining to international migration of high skilled personnel can be grouped up with the help of demarcating epochs. It can be analysed with the help of broader perspective of macro-economic framework in terms of development of host and receiving countries. Macro-level perspective reinstates the frame of brain drain, brain gain and brain circulation. On the other hand, there is micro-level perspective which describes individual's own decision to migrate for better prospects within the categorisation of push and pull factors. In addition, there has been emerging discussion about the changes in labour market for HRH and their subsequent demand pattern in developed nations.

6.4.1 Epoch One: Emergence of Macro-level Perspective in terms of Brain Drain and Brain Gain

Emergence of constructs like 'brain drain' can not be considered the outcome of policy debates concerning the developing world, rather it emerged into existence in context of migration of physicians from developed world. Mckay (1969) has sketched the onset of the phenomenon of brain drain to the first world countries, when trained physicians started to migrate from Britain to other countries and thus coined this terminology during the mid 1950s. Following this conception, most of the initial theoretical elaborations and discourses on brain drain have come out from American and British scholars. The reason was traced in assessing the effect at domestic level of Britain out of the movement of British Medical Graduates to North American countries. Mckay's observation was based on movement of large chunk of Scottish medical graduates to US, Canada, Australia and New Zealand during fifties and sixties. Before Mckay, Smith and Gales in 1964 published their observations based on the interview of 3600 physicians in England's National Health Services (NHS). They pointed that inflow of Scottish doctors to England during 1950s, compensated the loss incurred by movement of British doctors to American and other destinations (Gales & Smith, 1964). It was not only the Britishers who were concerned about their health care system and migration of their physicians but Americans were also getting perturbed with the upcoming shortages in late 1960s. Interestingly, Americans always tried to show the world that they actually wanted physicians to come back to the US after attaining experience and higher specialised degree in medicine (Gales & Smith, 1964).

It is only after the 1970, researches and academic discussions started to investigate upon the problems and issues of developing world. Among the various concerns of LMICs and poor developing nations, the issue of brain drain of their skilled personnel started to appear, though the cluster of these studies were very small. During 1970s, Von Hoek and Oscar Gish were the two pioneer authors who conducted their studies in this direction. Hoek argued that in countries of developed world (called it First World countries), especially after the World War II, the development on technological and scientific front, had moved the plane of development in their own economies. Gradual transition from labour intensive or labour based capital to the technological based capital accumulation and formation, had shifted the course of their labour demand. Their economies as well as their health care system required skilled labour in terms of scientists, engineers, qualified and competent health workers to feed into their growing systems (Hoek, 1970). Hoek asserted about the detrimental effect on sending economies (which were LMICs and developing nations) and asserted that because of lack of statistical data, the accurate measurement of brain drain was not possible. Thereby, he suggested to both the sending and receiving economies to revise and frame their educational policies in order to tackle their manpower demands (Hoek, 1970).

Oscar Gish had drawn the attention to bring out more researches and studies in this area whereby attention could be given to specific case of health workers' migration. He noticed that whatever studies were available or had been conducted, especially within the discipline of Economics, were much concerned for scientists and engineers, ignoring the doctors (Gish, 1971). He further asserted that health personnel should not be included under the generic studies of international migration of skilled labour but as specific type of labour migration requiring separate contextual and geographical analysis.

Researches followed afterwards were always flaunted with the complexities which were involved in physicians' migration as compared to any other high skill ones. Personal motivation and other individual aspirations were cited while looking for the reasons of their migration, instead of institutional or macro level factors. Brain drain with its pejorative ring, captured the attention of policy-makers worldwide beginning in the decade of the 1960's. The conventional view of the 'talented' international migrant, a young man of modest backgrounds crossing the high seas began to take definite shape and form with increased migration streams entering conventional hubs of destination countries like US, Canada, Australia (Wright et al, 2008).

Proponents of brain gain assumed that the students, professionals, and scientists who had migrated to the developed countries would not only acquire superior training but also

convert it into better jobs at home when they return, or in the case of medical doctors, invest in more lucrative private practices in their home country. Gain is therefore, associated with return with the hope that through studying and working with outstanding scientists and research teams in prestigious institutions abroad, migrants would be able to bring back the acquired skills and knowledge and apply them in the home country.

Discussion around brain gain has further strengthened the conception of diaspora as a 'Brain Bank'. This brain bank can provide new and promising dimensions with the growth of 'knowledge networks'. International Organization for Migration (IOM) has further supplemented this argument by emphasising more on knowledge exchange and transfers not through physical presence of returnees but through virtual means. Here virtual means indicate towards the "technology supported transfers of skills" using the advantages of information technology.

6.4.1.1 Brain Drain, Brain Gain and India as a Third World[3]

The migration of professionals from India increased noticeably from the late 1960s onwards. The so called "brain drain" involved professionals from across the different disciplines and employment channels. Initially, engineers, scientists, physicians, teachers were more prominently figured in this lot, but in later years IT professionals and entrepreneurs also featured well. Moreover at the end of 20th century, the perception of professionals leaving India underwent dramatic change- from brain drain in the 1960s and

[3] After the emergence of Cold War (1947- 1993) the notion of 'Third World' gained the prominence to describe various ends depending upon the politico-economic context. The term was used by Alfred Sauvy in an article entitled as 'Three Worlds, One Planet' which appeared in 1952 (Berger, 1994). Political analysts consider it both as a category and concept as well, depending upon the context of use. Since 1960, the term got popularity in academic parlance for frequently describing the notions of underdeveloped and developing countries, former colonies etc. The concept got more political significance during the period of Cold War. From the initial use of the term to demarcate between colonial and de-colonial movements, it acquired more of the political, social and economic connotations and carried the concepts of two major power blocs. It embraced the notion of political powerlessness, economic poverty and social marginalization (Caroline, 1999). The Euro-American hegemony got more clear representation in academic writings through this term which carried itself the paradigms of capitalist modernity. Many organisation and governments started using this term for Africa, Latin America, Asia and Middle East and calling for a politico-diplomatic unity across the globe among the First, Second and Third world countries. However after the disintegration of USSR which led to an end to Cold War era, have questioned the use of 'Third World'. But many academics argue that it still carries the relevance in contemporary era as it serves a reference point for studying the development of global politics (Dirlik, 2004). For detailed discussion *see Caroline, Thomas(1999)."Where is the Third World Now?" Review of International Studies*

1970s to 'brain bank' in 1980s and 1990s, and subsequently to 'brain gain' in the 21st century (Lal, 2006). Further high skilled migrants from India moved to foreign destinations also through academic channels apart from using the employment gate. Looking back in the history of health workers' migration, historically the initial phase was marked by the aspirations for higher education, which had its onset in colonial era and continued till late sixties, rendering UK as common destination choice. A commonly quoted guess is that in 1966, there were about 20,000 Indian doctors, engineers (graduates and diploma holders) and graduates scientists working abroad, excluding those who were still studying there. The position of doctors was rather more quantitatively significant than for the other groups. In 1965, there were about 4,000 Indian doctors in Britain and 1,125 Indian interns and residents in the US (Blaug *et al*, 1969).

Second wave of migration got boost after 1960, when many of trained physicians from Europe especially from Britain paced up their movement to US. This was partly due to restructuring of European economy aftermath of the Second World War. The gap in European countries was patted by physicians and nurses form Asian counterparts, prominently from India. General reasons were attributed to colonial linkages, linguistic affiliation and to the similar functioning of educational and bureaucratic machinery. India being one of the most populous countries having potential of training English speaking skilled man power, always acted as good supplier of professionals in different field (GCIM 2005; NCAER 2005). Further, workers were quite aware about their economic gains and professional development. This wave of migration experienced a downfall after 1985 because of the destination countries' stringent immigrant rules and regulations, for example, onset of licensing exams like ECFMG, issuing of work permits and restrictions on visa grants. In addition, these migrants started getting competitive edge from their other counterparts who were coming from other developed countries (Adkoli, 2006). Meanwhile, the course of migration of doctors and nurses from India shifted towards Middle East and other West Asian countries. However, migrant still preferred the western world and thus the major flow remained towards the later.

It is well argued and also statistically rooted that among developing nations, India stands out to be the largest supplier of trained doctors to countries like US and UK (Mullan, 2005). A good deal of information and categorisation of push and pull factors for migration exist across the various disciplines while discussing about the health personnel's movement from India (Astor et al. 2005). However, not much has been known and discussed in terms of

qualification (or perhaps quality) of physicians who choose to migrate with respect to those who stay behind. Grubel & Scott (1966) argued that it will be significant to analyse the quality of migrating lot or of migrated health workers and their comparative situation compared to those who remain. Therefore, number of health workers is not the only dimension to look into the various aspects of transmission of human capital between sending and receiving countries. Analysis in this direction, will further reveal about the type of health workers a country is sending abroad which may influence the source country in a positive or negative manner depending upon their context, requirement and availability. It may further provide information about the contribution that migrating physicians may make for their home country in terms of network building, knowledge transfer or in any other possible way. In this regard, Kaushik et al., (2008) argued that mere statistics can not explain or capture the welfare loss of sending countries because of the involvement of high skill health worker in various capacities like training, supervision, management etc. and not only for the provision of health care.

6.4.2 Epoch Two: Macro level Framework within Development Paradigm

Discussions over development and its inter-linkages with international migration have been a continuous process starting from the scholarly debate of brain drain in 1960s, which is still continued till now. The forms of debate may have changed but the underlying assumptions remain same. The debate starts from the question whether there is a general relationship between development and migration, and ends with the debate on two lines of thought. Primarily, these two lines of thought make the substantial literature on migration and development. The first line of argument says that migration brings benefit to all, to emigrant as well as to immigrant countries. This argument is widely accepted. In this tradition, the World Bank summarized a discussion on migration by simply concluding that Migration as a phenomenon renders the positive benefit to both destination and host countries (World Bank, 1995).

A second line of argument observes migration as a simple reflection of the needs and strategies of transnational capital. The basic point is that, powerful economies determine the agenda of global development in their own favour and so the subsequent global relationships. More or less, this point provides a basis to situate this line of argument in the framework of global political economy (GPE) which will be discussed in later sections. The migration of labour which took place during 1945-75, can be described as a result of the main economic

strategy of large scale capital (Castles and Miller, 2009). Further discussions in this regard gathered momentum under the ambit of brain drain which was to bring out the non-beneficial aspects of international migration for the sending countries. These international migrants mostly constitute the high skilled chunk of 'Southern'[4] countries.

There also exists a third and ambivalent position, which argues that it is not easy to define the relationship of migration and development by simply putting it into the brain drain or brain gain framework. International migration being a complicated phenomenon, which involves various actors at different levels and in different contexts, can have both positive and negative dimensions for either destination and home countries. This position is quite popular among researchers today (OECD, 2003). Even earlier economists argued that there were positive as well as negative impacts of migration on development, normally ending up in an inconclusive note. Positive impact is attributed to remittances, re-skilling of people and bringing new technologies back home which pace up the development at host country. on the other hand, the negative impact pertained to losing the skilled people by home country which hampers overall development (Lewis, 1954).

Within the ambit of these three general frameworks which related migration to development, most of the economic theories which have tried to explain migration of health professionals can be situated. Geographical aspects relate it to the gravity and movement of population beyond geographical borders with multiple reasons behind it, however, economic reason being one of the most important. Economists often focus on scarcity of resources, the functioning of markets and the individual maximization of life-time utility. Although mainstream economics have not paid any substantial attention regarding the development of any particular theory, but economic explanations have dominated the popular and scholarly thinking on migration. Starting from migration-development nexus to the brain drain-brain gain debate, economic rationale and modelling has remained a baseline factor for all discussions. Immigrant selection system in most receiving countries prefer employment based classifications that consist of members holding advanced degrees or having exceptional ability in the science, arts, or business, in other words, people who can contribute to the economy in some way. Gains- either through the diaspora or the return option-are also measured with respect to economic benefits for the home country. Therefore it can be argued

[4] The southern countries include countries from Asia, Africa and Latin America that are economically less developed. They are internally very heterogeneous and different in most respects. Northern countries include most of the developed countries of the world.

that, the discourse on brain drain or brain gain, in short, has revolved around the "economic aspect of the migration in general and education in particular. Substantial evidences from the stock and flow of migration and from the policy documents show that preference of human capital with their economic utility are more preferred.

6.4.3. Epoch Three: Micro-level Perspective and Push-Pull Factors

Physicians or other health workers mostly migrate to developed nations in search of better careers and opportunities, though their movement have triggered the concern of global health workforce imbalances (Mejia et al, 1979). This has led to theorisation of their movement in terms of push factors which arises out of the home country's socio-economic and political factors (Massey et al.,1993). Factors may range from poor salary, poor compensation and allowances to poor infrastructure, equipments and bureaucratic behaviour of government. Similarly, the other side which is termed by migration theorists as pull factors, encompasses opposite situations in destination countries like better pay, better living and working conditions etc. The categorisation of these factors is rooted in individualistic approach, whereby micro-level context becomes more important. Perhaps this might be a reason that Human Capital approach[5] is considered an important contribution in micro-economic theory (Sjaastad 1962 ; Becker 1964). This approach implies two theoretical innovations- Firstly, migrants are no longer treated as a homogenous group of identical individuals. Interpersonal differences in time horizons and preferences for the present are now taken into the account. Second, international migration is also considered as an investment in human capital. An individual decides to change his or her location in response to better wages, earning capacity and improvement in skills which are considered the different forms of investment. However this involves economic and non-economic cost in terms of transportation, maintenance, social cohesion, acculturation, learning of new languages etc. Investment decision therefore involves the cost-benefit analysis by a potential migrant before moving to any international destination. They prefer to move where the expected discounted net returns are more in a given or predefined time horizon (Borjas, 1989). Classical Harris- Todaro model and macro-economic neo-classical framework explain the demand in destination country and supply from host countries use this rubric to explain the migration.

[5]Admittedly, a drawback of the introduction of human capital into a neo-classical framework is that, it implies that skills and human capital are more scarce in the developed countries than in the developing ones. It does not consider differences in technology and increasing economies of scale. These features are central to the divergence school.

Other theorisation consider migration as an outcome of various decision making entities, ranging from individual to household and to the institution (Stark & Bloom, 1985). Another discourse has placed migration under the 'world systems framework theory', which emphasises more upon the development of permeable networks among the involving countries during the process of migration. This may be considered as an extension of micro-level assumptions, whereby through a chain of migration a global network of a particular skill transfer establishes itself, at the same time transforming it to the macro-level (Cheng & Yang, 1998).

6.4.4 Epoch Four: Neo-liberal and Global Economic Perspective on India's Labour Market for Physicians

Many researchers believe that it is good for the overall welfare of world to develop a system where skills can be interchanged and used efficiently, wherever it can be done so. Mobility of scholars will in fact, enhance and provide a platform to share the latest innovations and knowledge. For example, Grubel & Scott (1966) in their widely acclaimed work argued about the potential benefits of movement of high skilled people across the globe. However they posited certain conditions to be met while welcoming the emigration. The first condition is about increment in emigrant's income when he moves to other country. And the other related condition is, this movement should not bring down the income of those who remain left in source country. While others believe, it is draining those skilled professionals like doctors, which are the backbone of human resource systems of any country, especially developing country. Migration of doctors forms a core segment of this debate, as researchers have enacted the brain drain through migration of doctors under the broader term migration of skilled professionals. It has been argued that migration of doctors and nurses are somewhat different from the other categories of skilled labour movement. It erodes the skill base of trained personnel which is important for their role in preparing the future health workers. It also involves ethical considerations on the ground that their movement is mostly unidirectional i.e., from global south to global north (Stilwell *et al* 2004; Mensah *et al* 2005; WHO, 2006). Mensah et al., (2005) situated this argument in the concept of redistributive justice, whereby sending countries may incur welfare loss in terms of losing their valuable health workers, which eventually lead to their falling health indicators.

As discussed earlier, academics over the issue of global health worker's migration has accentuated various perspectives ranging from generalised push-pull factors to macro level factors of brain drain -brain gain debate. Of late, the emergence of post-colonial literature in various disciplines and development of global care chain has remoulded the discussion over

health personnel's migration (Kalipeni et al., 2012). Recently, GPE has provided a more elaborated platform in the form of multilevel and trans-disciplinary perspective to analyse the health personnel's migration. Proponents of GPE argue that given the nature and complexity of health workers' migration, GPE's trans-disciplinary nature can be aptly applied to this field as it involves the constructs of various disciplines (Warton-Robert, 2015). For example, the migration of nurses form Philippines is more of an outcome of its educational system which is structured as per the labour market of health workers in US (Choy 2003; Valiani, 2012). This implies towards the shift of migration policies of global south towards the global north by promoting the feminised labour export policy, which in turn would promote the global integration of labour market (Valiani, 2012). These kind of scholarly researches especially related to nurses' migration are generally informed by the aspects of gendered migration. Constructs of feminist political economy and situating it within the broader theme of globalisation has enticed the research in the field of gendered migration. These studies situate the gendered migration within the ambit of emerging crisis in the care economy of developed countries (Parrenas, 2000). Training of nurses in many of the developing countries like Philippines seems to be oriented to cater this global need of care professionals (Hochschild, 2000).

Some of the papers argued that because of pacing globalisation of Indian health care sector a global distinction has been created in terms of core and periphery geographical demarcation (Crone, 2008). Currently, Indian health care system is featured as one of the fastest growing privatised market in almost every segment of health care (Madhukar, 2008). It has been further argued that increasing privatisation of health services in India and also in other countries has led to a kind of inequality at all levels (be it national, regional or international). This unevenness has been responsible for applying the north-south binary in terms of directionality of health workers' movement (Reynolds et al., 2013). Levitt and Rajaram's (2013) in their research paper analysed the different health organisations in India and posited that experiences of health personnel who moved abroad or worked there, are mostly inclined or became oriented towards the neo-liberal or market dominated form of health care delivery. They further observed that in terms of educational experiences of medical graduates who got training overseas or in private institution in host country, are more inclined to adopt the neo-liberal philosophy which further echoes the market based ethos in health care (Levitt and Rajaram, 2013).

In this framework of GPE, if we analyse the Indian health care system, the private sector supplies for more than 70 % of health workers. Further, 71 % of health expenditure is

in terms of out of pocket expenditure (OOP), which has been putting a huge burden on poor people for their expenses on health (Rao et al 2011; NIPFP 2012). Increasing reliance on private sector and corporatisation of health system has further led to increase in marketisation of medical education system (Chakravarthi, 2010). The huge profit in this sector has attracted many of the NRIs and big corporate houses to establish multi speciality hospitals and health care chains in India (Hazarika, 2010).[6] Global financial organisations like World Bank through IFC (International Finance Corporation) has promoted big corporate houses and private companies to establish and collaborate with developed countries in terms of medical education and training (Roberts, 2015).

6.5 International Migration: Important Variable in Effecting the Supply of Physicians in India: Arguments and Concerns

The achievements of India in terms of basic health indicators, such as life expectancy at birth (68 years in 2014), infant mortality rate (41.4 per 1000 live births in 2013), maternal mortality (174 per 100,000 live births in 2014), births attended by skilled health personnel (67 percent in 2007-14) are disappointing compared to other similarly advanced Southeast Asian nations like Indonesia, Philippines and Sri Lanka. Table 7.9 provides a comparative observation in terms of per capita health expenditure, MMR and Life expectancy with some select countries. These are some of the structural problems prevailing in Indian Health care system. Apart from this, according 44 million children constituting 39 percent of all children under-five years in India in 2013-14 were stunted as per the *India Health Report 2015* (Raykar et al, 2015). While, the global rate of stunted children is 24 percent. The burden of communicable diseases like Polio, TB, HIV etc., have been posing a greater challenge, which require robust health infrastructure and adequate manpower. Apart from this, trends of epidemiological transition has been emerging in all parts (rural as well as urban) of India, in which non-communicable (NCDs) and chronic diseases are more prominently surfacing up (WHO, 2015). These health related factors combined with incidence of poverty, have been decimating the productive population of India.

[6] MEMG (Manipal Education and Medical Group) is third largest health care delivery chain in India which has established its heath care hubs and hospitals at offshore destinations apart from India. They received US $ 30 million loan assistance from IFC (subsidiary of World Bank) to establish a medical university in Antigua.

Table 6.9: Per Capita Health Expenditure, Life Expectancy and MMR across Some Select Countries

	Per Capita Health Expenditure (PPP at 2011 price in $)			Life Expectancy at birth			MMR/100,000 (Live Birth)			Physician/10,000
Year -->	**2000**	**2005**	**2014**	**2000**	**2005**	**2014**	**2000**	**2005**	**2014**	**2014**
Country										
Australia	2298.60	3031.41	4357.26	79.23	80.84	82.50	9	7	6	35
Canada	2540.59	3469.04	4640.95	79.24	80.29	82.14	9	9	7	21
Germany	2692.83	3383.72	5182.11	77.93	78.93	81.02	8	7	6	38
Iceland	2767.39	3340.09	3881.70	79.65	81.50	82.68	5	4	3	34
India	85.21	122.51	267.41	62.63	64.52	68.35	374	280	174	7
Italy	2110.34	2587.33	3238.89	79.78	80.78	83.20	5	4	4	37
New Zealand	1613.91	2134.66	4018.31	78.64	79.85	81.96	12	14	11	27
Norway	3053.04	4316.99	6346.62	78.63	80.04	81.66	7	7	5	42
United States	4788.31	6741.03	9402.54	76.64	77.49	79.16	12	13	14	25
United Kingdom	1833.53	2746.28	3376.87	77.74	79.05	80.78	12	12	9	27

Source: WDI Database as on 14th June, 2016(WB)

India's health performance on all these fronts and indicators remain poor despite various measures adopted to impact and improve the basic health outcomes of the population. Programmes like National Rural Health Mission (NRHM) and Millennium Development Goals (MDGs) are pursued to ameliorate the health parameters.

Medical manpower in terms of physicians will be key factor in implementing and subsequently improving the India's health performance. However, the rapid growth of key medical workforce such as doctors, nurses and dentists through expansion of private medical education in the last decade could not transform the basic health outcomes of the population in a significant way. The major reasons are: one, the increase in health workforce is not adequate to match the much rapid increase in aggregate healthcare needs of the rising population, and two, the higher capabilities and expectations of the existing medical practitioners, especially specialists, does not match with the primary healthcare requirements and affordability of the masses who live in rural areas. Other reasons include increasing migration of doctors every year for pursuing higher studies overseas in order to achieve the benchmark and place themselves in the higher echelons of the growing corporate urban healthcare market.

Analysis based on the 2001 Census indicated that the India has been lagging behind in terms of density of overall health workers (qualified plus unqualified) which was 20 percent less than the WHO norm of 25 health workers[7] per 10,000 population (MHFW, 2010). According to WHO, countries having less than 25 healthcare professionals per 10,000 population are unlikely to be able to provide 'basic minimum healthcare'[8] to its population. The requirement of 25 healthcare professionals includes 2 doctors, 10 nurses and 13 other health workers (WHO, 2008). A decade later, India still fails to meet the minimum benchmark of health workers entirely, though it fulfils the minimum number of doctors prescribed by WHO under this norm (WHO, 2014; p. 19).[9] According to WHO and the Ministry of Health and Family Welfare (MHFW), India currently has 7 doctors per 10,000 population (WHO, 2015). However, derivation of this ratio is based on the registration of doctors in the Indian and State medical registers, which are not adjusted to attrition of the strength due to retirement, discontinuation of practice, emigration and death of doctors.

In the previous section, the detailed analysis of pattern and trend of international migration of Indian physicians is presented. Indian healthcare is unwittingly suffering from emigration of doctors, nurses and dentists. Emigration of doctors is one of the major reasons in aggravating the problem of shortage of skills in the key healthcare services and medical training. For example, according to a Government of India source, only around 3,500 psychiatrists were available in the country in 2010 against a requirement of about 10,000. Compared to this, 4,687 Indian psychiatrists were found practicing in the four developed countries, such as, USA, UK, New Zealand and Australia during the same time (Jenkins et. al., 2010). This becomes more significant in the context that nearly 15 percent of India's population suffers from mental problems, and only one percent of them are admitted in hospitals (The Times of India, July 25, 2015, New Delhi). Not only psychiatrists but other specialists like cardiologists, neuro-surgeons, anaesthetists and radiologist are also increasingly migrating exacerbating the problem of shortage of key specialists in India (Adkoli, 2006). Not only in terms of its effect on labour market for physicians in India, but also in medical education sector, huge shortage for faculty members are reported throughout

[7] These include doctors, nurses, midwives and other skilled health workers.

[8] The 'basic minimum healthcare' as defined by the Millennium Development Goals (MDGs) is 80 percent coverage rate of child births by skilled birth attendants (WHO, 2009).

[9] India possesses 15.2 skilled health workers (physicians, nurses and midwives and other qualified or trained health workers) per 10,000 population in 2010 (WHO, 2014; p 84).

the different medical colleges in India, which is estimated at around 3,000 to 4,000 vacant positions (Mishra, 2011).

Despite the recent decline in the entry of Indian medical graduates to US and UK, their accumulated stocks in these countries were staggeringly high in 2013-14. According to the General Medical Council (GMC), UK, there were 25,116 Indian medical graduates registered with it in 2013. Of them, 23,420 were given license to practice. Similarly, Federation of State Medical Boards, USA reported that 48,337 Indian medical graduates were given licenses to practice in the US as on 2014 (The Times of India, January 9, 2016, New Delhi). There are also about 3,981 Indian medical graduates practicing in Australia, 1,943 in Canada, 468 in New Zealand, 177 in Germany and 36 in Norway in 2013. Though, no reliable data are available on the number of foreign doctors working in the Gulf, media reports indicate Gulf countries employ large number of doctors from South Asia region, especially from India, Pakistan and Bangladesh.[10] Guesstimates suggest that a stock of about 20,000 doctors from South Asia region present in the Gulf (Adkoli, 2006). Even it is assumed that about half of them are from India, the total stock of Indian doctors present outside the country (all over the world) accumulate to about 90,537. This constituted around 13 % of the active doctors (after deductions made for retirement) in the country in 2014.

Keeping in mind rapid ageing of population in the western countries with negative implications on the size of their health workforce on the one hand and increasing healthcare needs of the elderly on the other, it is pertinent to assume that the stock of Indian doctors abroad would increase further in future. Therefore, Indian planners must anticipate a leakage of at least 120-130 thousand doctors from the Indian labour market of physicians, if emigration rate is restricted to 10 % of the active doctors from the current levels of 13%) from the country to immigration abroad in 2030.

Accordingly, there were 600,031 doctors available for practice in India in 2014 to serve its 1239 million population with a doctor-population ratio of just 4.84 per 10,000 people. This ration is after taking into account of two important causes of attrition of doctors such as retirement and emigration, the strength of doctors reduced by 36.5 % and the doctor-population ratio curbed from 7 to 4.8 per 10,000 population. This ratio (4.8 per 10,000

[10]The Saudi Arabian government announced in March, 2009 that it will recruit 5,000 doctors for its newly established government hospitals, and the recruitment will be made from India, Pakistan and Bangladesh (Gulf News, March 10, 2009). In Oman, there were about 2,000 Indian doctors (ICWA, 2001). The Indian doctors in Kuwait formed an Indian Doctors Forum (IDF), which had about 600 members of Indian origin in 2007 (Indian Doctors Forum – Kuwait). Indian Newspapers also show periodic advertisements of recruiters for recruitment of doctors for gulf countries.

population) of practice doctors in India is much lower than the ratios in Brazil (18.9), China (14.9) and South Africa (7.8) as per their actual availability.

Though, international migration of physicians is not directly responsible to their shortage in rural areas, but it may reduce the aggregate supply of doctors in the country and triggers internal mobility of doctors from underserved or rural area to urban settlements. India des not endorse a concerted regulating policy framework for the emigration of high skilled professionals like physicians. It tried to address the problem of emigration through strengthening domestic supply of professionals by expanding and improving educational and employment opportunities and conditions in India (Khadria, 2010). With regard to emigration of doctors however Indian authorities have undertaken a series of actions to stem emigration of doctors. But still an uniform approach or consensus have not been achieved so far. For example, in the past, the Ministry of Health and Family Welfare (MHFW) has introduced a ban on emigration of doctors from the country. The ban required the emigrant medical students to seek a No-Objection Certificate (NOC) and sign a bond with an agreement to return after completion of studies. The Ministry has also introduced a fee of INR 50,000 (USD 1,120) for the issue of a No-Objection Certificate (NOC) and INR 100,000 (USD 2,240) for a No Obligation to Return to India (NORI) certificate as monetary compensation for the removal of restrictions on emigration (Khadria, 2002). The MHFW has renewed such measure introducing a similar ban on emigration of doctors to the US on April 23, 2012. The ban requires the Indian medical students going to US for higher studies to sign a bond promising to return to India after completion of studies (*The Hindu*, April 23, 2012, New Delhi). The ban is imposed to stem the emigration of large number of Indian doctors to the US for higher studies, who eventually do not return.[11]

Similarly, a bilateral agreement with UK prohibits recruitment of health workers from four Indian States, viz West Bengal, Madhya Pradesh, Orissa and Andhra Pradesh, receiving Department for International Development (DFID) aid (Potnuru, 2016). In order to discourage emigration, the Government of India also de-recognized the medical Postgraduate (PG) degree earned abroad. It was in March 2008, the government of India announced the recognition of PG medical degrees earned from the five major countries of immigration of Indian doctors such as UK, US, Canada, Australia and New Zealand (The Times of India, March 28, 2008). This was done in order to meet domestic shortages of medical teachers by

[11] According to MH&FW, 3000 doctors migrated to the US for higher education during 2009-12 and did not return to India (Indiarealtime, 2012).

easing barriers for temporary and permanent return of its doctors from abroad for teaching in the newly established medical colleges and institutions in India. More stringent restrictive measures like denying passport and a compulsory rural service for emigrating doctors have also been discussed in the past but have never been implemented (Jeffery, 1976).

6.6 Concluding Remarks

Through this chapter, an attempt is made to describe the pattern and trend of Indian physicians migrating abroad, which can be seen as leakage from their labour market at home country, where they are trained to serve for the population's need as well as demand. This leakage has not only to do with the dynamics of labour market but also to the medical education sector, where they are in demand to train the future physicians. The mushrooming private medical colleges in India have been catering to the demand in urban areas. Most of the medical graduates coming out of private university, tend to practice in urban areas. Increasing pace of privatisation of medical education as well as physician's services has been leading towards the situation of internal brain drain i.e., physicians moving to urban areas from the rural ones and also from public to private sector or individual practices. On the other hand, external brain drain is witnessed in the form of international migration for better prospects, good salary, and working conditions. International migration has affected well trained physicans' labour market at home in terms of their aggregate supply. Although data related to international migration from each and every state is not available neither government has taken any concrete initiative towards this issue, but still a gross estimate at all India level depicts their substantial movement from home. The doctors returned from overseas with experience and degrees have in fact, strengthened the further corporatization of Indian healthcare by setting up super-specialty hospital chains in the metropolitan and urban areas. These hospital chains also created conducive conditions, with almost similar work environment as abroad, for both emigration and return of doctors. However, the benefits of such international flows have largely been limited to the private corporate healthcare. These developments have served the interests of doctors by yielding higher returns to their investment in medical education, and mainly served to urban middle class by providing greater access to better healthcare, thus sidelining the poor and underserved population. Thus, as long as there is aggregate shortfall of doctors in the country and disparities are found at national and international labour markets, India will continue to suffer with shortages of

doctors.[12] This can be said for developed countries with adequate physician-population ratios and advanced rural infrastructure which still face shortages of doctors in the rural and backward areas.

The orientation of Indian medical education and practices are based on the western standards and practices. Constant aspiration of Indian medical system to get recognized and valued in the international medical practices, has led to deviate it from the rural needs and concerns.[13] In a recent news, the Prime Minister of India reckoned with the idea of creating the skill banks to train workers for global market, especially from the states like Uttar Pradesh and Bihar as these are the two most populous states with maximum migration for overseas employment. Training centres will impart skills mainly in medicine, healthcare, IT related and hospitality sectors (The Hindu, 2nd July, 2016).

The continued western aspiration of Indian medical system has stopped policy makers to take any serious measures to re-orient or reform Indian medical education and practices to suit its own local and rural needs. For example, after India's independence, the personnel training programme under "licentiate training" course (lower qualification than MBBS), which was started to produce willing, able and suitable health workers to serve the rural population at cheaper price and deliver services quicker, was discontinued in the 1950's.[14] The global political economy has created inclination in favour of producing more of international medical graduate rather than Indian medical graduate. As Chiswick & Miller (2015) argued that African and the Indian Medical Education System are still rooted deeply in colonial era and so are their way and curriculum of medical education. On the other hand, India's own health care system is constrained financially as well as in terms of adequate infrastructure. This often makes it difficult to lure and motivate physicians to work in rural or underserved areas. If government adopts for stringent measures (for e.g., cancelling the

[12]The difference between national and international labour markets lead to international migration from developing to developed countries, which in turn triggers internal migration from backward regions to developed regions within the developing country.

[13] In a recent news, PM Narendra Modi said "the human resource capital" of the world will first take off in Uttar Pradesh and Bihar, where the government is setting up 50 global skill banks this year to train potential immigrant workers in 110 job roles as per international standards." These banks, or training centres, will impart skills across sectors such as medicine and healthcare, hospitality, IT, construction, automobile and retail trade — where job opportunities exist or are likely to arise across different countries, before they emigrate. (The Hindu, 2nd July 2016).

[14] One of the reasons for the discontinuation of the course was that other countries were unwilling to recognize Indian medical qualification, if these personnel with lower qualification were included in the Indian Medical Register (Jeffery, 1976).

license, if not practising in rural area or cutting off the other monetary compensation etc.) opportune medical graduates and practising doctors tend to migrate abroad (Martin, 2015). Although this may nt be applicable to all medical graduates because of their own socio-economic and other constraints, but it still indicates toward their intentions. Therefore, government has to create a suitable institutional and administrative space, where health personnel can be accommodated to suit India's own requirements.

Chapter Seven:
Discussion and Conclusion

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7.1 General Findings

Physicians play an important role in delivering the health care services to the population and thus provide an important labour input in the production process of health services. This has imparted them a distinct market for labour in terms of various economic and non-economic characteristics. Categorised as high skilled labour, their production and supply are quite different as compared to the general category of supply of labour. On a conventional note, labour economics conceives the health worker's labour market as an outcome of two independent economic forces viz., the supply of health care workers and their demand (Scheffler, 2008). Further, the labour market for physicians is derived from the market for medical services which is considered as demand side dynamics. On the other hand, the supply of physicians is analysed in terms of market for medical education (Sorokin 1984; WB 2014). Research literature informs that, limited studies are conducted in the past to study the interplay of market forces in the provision of health care. Those studies which deal with the supply side dynamics, have mainly focussed on production of physicians at macro level. However, even these kind of literature are scarce in case of LMICs and Indian context (Squires et al, 2016).

Earlier studies and policy discussions have relied more upon the augmentative interpositions to address the non-availability of health worker (WB, 2014). This is based on the assumption that more health workers to the population can be a practical measure to enhance the health of the population both in rural and urban areas. This aspect is manifested in various policy level interventions for narrowing the rural and urban divide (scaling up interventions) of physicians which might be a short run perspective for addressing the policy level research especially for LMICs having varied contexts. Most of the recent and even earlier studies sponsored by international agencies like WHO and World Bank have tried to address the issue of skewed distribution of health workers in LMICs by resorting to these measures. Perhaps, this lopsided and non-behavioural approach has led to the emergence of neo-liberal policies in the field of medical education in a country like India, where health care has been suffering from several structural bottlenecks. Contingency to the production of health worker while neglecting the other significant factors, which may influence the availability of already produced human resource. Insights from the field of behavioural and

political economy are required to analyse these problems as they address the institutional factors through their theoretical propositions.

Another interesting observation is that, labour supply decisions of nurses have received more attention rather than physicians because of varied reasons. The major reason cited is availability of longitudinal data sets for their wage rate which facilitated empirical analysis of nurses' labour market. In case of physicians, the same may not be the case as their income sources tend to show more fluctuations. Furthermore, within the general terminology of doctors there are specific skills in terms of their degree and specialisation, which complicate the theoretical and empirical analysis. In India case, the sources of income and hierarchy in degree or specialisation for doctors are quite varied and uncertain. This becomes more severe in rural and underserved areas because of the presence of quacks and doctors holding fake or incomplete qualifications.

Specification of labour supply in terms of physicians' choices has not received much attention as much as demand side has received so far. Economic models that are applied in health sector, were basically concerned with estimating the aggregate demand of health workers (Anand &Bernighausen 2012; Mcpake et al. 2013; WB 2014). It has been argued that the distribution of demand appears to be a major factor in shaping labour supply responses. But these studies have been reported with flaws. They have been mostly carried out from the viewpoint of demographic and epidemiological profiles of the population, therefore, neglecting the fact as how profession itself has created the demand for medical graduates. The growing social repute of the medical profession has, in fact, drawn the interests of students. In this case, the pure economic rationale of choosing the medicine as career, can not be applied *in toto*. Here, it is important to mention again that few analyses are available which have used the framework of labour economics to study the dynamics of health worker's labour market in LMICs including India (WHO reports of only 17 country wise study from these regions so far). Therefore, it can be argued that application of labour economics along with the behavioural and institutional perspectives, has received lesser attention for studying the physicians' labour market.

This study has derived its rationale from the extensive review of existing theoretical and empirical literature regarding the supply decision of physicians in the geographical setting of rural and urban areas of India. This study has chosen the most populous and one of the largest states in terms of its geographical characteristics of India namely, Uttar Pradesh

Another significant characteristic is its stark rural and urban divide in terms of population characteristics. Within UP, Allahabad is the most populous district both for the rural and urban area, which has been selected for further study.

Furthermore, Indian subcontinent is also known for its place in global map for supplying a significant chunk of physicians and nurses to developed and other developing countries since colonial times. With respect to international mobility of physicians, it has been argued that migration have produced more of a negative kind of impact on reducing the overall supply of physicians in India. The present study has analysed the arguments arising out of this external mobility of physicians from different perspectives. In this regard, the study has used the secondary sources of data. This study derives its analytical base from theoretical underpinnings rooted in neo-classical paradigm. In terms of empirics, the study has used qualitative as well as quantitative approach to overhaul the available data and bring out some case specific observation. Summarily, the whole study addresses three major objectives with its related research questions. The first objective was to explore and analyse the interplay of pecuniary and non-pecuniary factors which influence the conditions for supplying the physicians' labour in rural and urban setting. The second objective was to look into the supply side dynamics by analysing the Indian as well as UP's own medical education system. The third objective was to observe the recent general pattern of Indian doctors for migrating abroad with a fresh perspective from global political economy approach. The study has tried to enquire about the link between aggregate supply of doctors in India and their migration to abroad in general. It has to be taken into account while interpreting the results that the study does not address causal relationship between these two variables. Similarly, for other two objectives, the study have not measured or interpreted effect of one or more variable to the other because of certain econometric limitations which will be discussed later in this chapter. The major general findings of the study are presented below, as per the objectives and research questions of the study.

- In general, theories falling into the neo-classical domain, determine the wages as per the demand and supply conditions of labour (either skilled, semi-skilled or informal labour) but specification of demand for physicians' services is found to be complex. This observation holds true for Indian case also. Demand for physicians' services can be either need based (demographics/ epidemiological/social profile of the population) or based on the "ability" or "willingness" to pay by the population. Again, there is difference between the ability to pay and willingness to pay for these services, which

explicitly depends upon several economic and non-economic characteristics of the population. In terms of geographical demarcation, rural and urban settings have different demand patterns for the health care.

- Theoretically placing, labour economics mistrust the stated preferences and prefer to build its analysis on revealed preferences. On the other hand, behavioural economics (of late some researches from the domain of health economics also) consider the stated preferences as reliable instrument to study the choices of health workers. In case of physicians, the stated and the revealed preferences may vary as per the socio-economic context and location of their practice. This difference leads to mis-specification which is questionable while formulating the utility function of physicians' labour supply in rural and urban areas.

- The study did not find any strong response to the increased wage rate. Those who were in favour of increasing the salary, also accepted, that was not the long term solution. Long term strategies require consideration of non-economic factors.
- Conceptualisation and demarcation of monetary and non-monetary factors are often blurred and overlapping and at some places, substitutable with each other in both the settings. This leads to the problem of simultaneity of pecuniary and non-pecuniary factors while studying their decision to practice in a particular area. This poses the question to the claim of compensating wage differential as policy intervention to retain rural doctors (compensating wage differential was proposed by World Bank & many of the WHO studies). Lack of absolute demarcation between pecuniary and non-pecuniary factors has further led the questioning of market to decide the wage rate.

- It has been argued in the literature that the centralised pay structure or fixed wage structure by Indian government has created occupational disequilibrium while opting for rural or urban area. On the other hand, the study found that a centralised pay system have not much influence over the choices of physicians for opting any particular area.

- The study found that conceptualisation of social environment was one of the important factors for within the broader category of non-pecuniary factors. Social environment is a contexts specific factor, which has not been discussed in earlier studies.

7.2 Specific Findings

- Spatial distribution of medical colleges across the India does play an important role for concentration of doctors in rural and urban setting as envisaged by some recent literature. However, present study has not observed any specific evidence for that. In case of Uttar Pradesh the findings suggest that, distribution of colleges may not have much significant role to play as many of the regions which have concentration of government medical colleges are noticed with acute scarcity of doctors. The study could not find any distinct association while observing the distribution of colleges and availability of doctors in a particular region (the doctor/ population ratio and average population served by doctors are among the lowest in region where maximum number of Government Colleges are situated).
- The distribution of private medical colleges are mostly concentrated in urban or satellite areas. The distribution of private medical colleges is heavily skewed as compared to the government colleges.
- Socio-psychological studies, have emphatically pointed the role of job satisfaction in terms of patient's satisfaction (also termed as pro-social motivations while some studies have termed it as personal motivation) as one of the prominent factor for working in a particular area. But this study did not find any significant evidence to support the existing observation. Only 12.4 % doctors working in rural area and 8.4 % from urban area have reported to this factor.

- Non-labour income and income from spouse has been found to reduce time spent in the paid labour force for physicians in both the setting (Brewer, 1996, Phillips 1995, WB, 2014), but in this study it has not been observed, even for those whose spouse are earning.

- Most of the studies argued that birth place of physicians and familiarity with rural area has positive associations to the preference or motivation to work in rural or urban area. The study observed that urban born doctors have more inclination towards working in rural area as compared to their rural born counterparts.

- Specialisation is a function of wage differential for physicians, irrespective of gender as found in many of the earlier empirical studies. This is theoretically supported by human capital framework that higher training or specialisation is related to positive earning differential. The present study did not find any specific evidence for

specialisation and wage differential for females, because most of females did not go for specialisation in spite of opportunities to do so. Career progression and further specialisation found to be a factor for male doctors to be in urban areas. In this regard, various factors qualifying to this observation have been cited by them. This finding is also contrary to the general observation in Indian context that doctors concentrated in urban areas utilise their opportunity to specialise further. But in case of female doctors, it has been found that they are concentrated in urban area nonetheless they do not opt for highly specialised degrees. On the other hand, secondary data sources from MHRD for the enrolment of students for MBBS stream show female's increased participation than the males.

- Political and bureaucratic factors emerged as important factors for their distribution, both in terms of micro and macro-level decisions.

- The process of production and supply of physicians in Indian labour market depend upon the institutional factors but also other external and internal leakages like international mobility and internal mobility. Internal mobility confers to mobility from urban to rural or vice-versa. On the other hand, international migration in general, is quoted an important factor to be affecting supply but the extent and magnitude require to be explored further. It can not be stated assertively that either aggregate supply or specific supply in any region like rural areas of UP are getting effected by international mobility.

- Theoretically situating, the leisure versus income or wage rate trade off could not be fully applicable in case of Indian context especially in a particular geographical and demographic set up. The elasticity of supply in different setting and even for different socio-demographic context is differently affected by non-pecuniary factors and vary considerably within the domain of later.

- Both micro and macro-level factors have been found to be operating for physicians' urban and rural setting. But how they correlate and how they may be projected in labour supply models are empirical questions. In this case, the whole neo-classical set up can be questioned whereby individual or micro level factors play important role in formulating the labour supply decisions of the individual.

7.3 Discussion

On a theoretical note, the neo-classical labour market has focussed mainly upon the pecuniary factors which influence the labour supply decisions. Labour supply has been related to physicians' sector choice. This has been supported form the wage as a factor to influence it. But in this study wages or expected life time income is more prominent during the decision of pursuing the field of medicine. While making choices to work in rural or urban area, other non-pecuniary factors also play an important role. It has been found that physician's voluntary turnover is not much related to workload factor as argued by some studies done on developed countries. Although the study did not interview private practicing doctors, but those who were asked about this, cited non-pecuniary aspects like living conditions, familial proximity etc. as probable reason to go for private practice. However this revelation can be questioned as doctors usually do not reveal of their intention to earn more from private practices. The concept of backward bending labour supply does not find to be operating in physicians' labour market in either of the settings. Segmentation of labour market was found at various levels and not at sectoral level.

Our analysis shows that non-pecuniary factors were related to physicians' labour supply decisions in rural and urban area. The element of 'workplace related variables influences physicians' sector choice. It has been argued that if a physician was familiar with his or her workplace before completing medical studies, he or she tended to choose the public sector as primary working sector, but in this study this observation is not supported.

Also it has been found the physicians' choice to work in a particular special setting tends to change with the time. We can conclude that it's not only the spatial setting which influences the working decision of physicians but also the time line of his service or working span. For example, as discussed in chapter five, that Job satisfaction is not the composition of just one factor, it differs from physician to physician. The male and female physician has different parameters for their job satisfaction. Also, in terms of space and time this factor varies for different individual practioners. The narratives collected during the interview substantiate this finding. For example, female physician may prefer to less working hours as a component of job satisfaction while male doctors prefer to better salary scale with many other allowances in terms of their job satisfaction. Primarily, prestigious career and further aspect of specialisation have promoted physicians to go for urban practices or private practices a kind of voluntary turnover. In earlier empirical studies, non-pecuniary factors is

found to be effecting the performances of physicians and nurses by effecting the hours supplied by them at workplace.

Most of the studies included gender as major demographic factor which influences the decision of health workers to practice in a particular location. But in this study, gender is categorised as social factor. The reasons are many. Some study in developed countries reported that demographic and social factors like age, gender, marital status, children etc. had no impact on physicians' sector choice or location choice. But in case of India, gender, marital status and even experience at work place play an important role, as noticed in the study also. This factor indirectly manifest into the job satisfaction of physicians.

The economic literature has focussed on financial incentives which influence the labour supply both for short term and in long term analysis. Non-pecuniary aspects are mostly sidelined partly because of lack of data and also of the complexity of motivations in different time and space. Psychological studies have ignored the concept of utility and employee's labour supply responses while discussing about the motivation for job.

7.3.1 Concept of Rural and Urban Demarcation: Arguments

Certain limitations and concerns are observed while conceptualising the rural and urban settlements for carrying out the current study. Different countries have different criteria for this classification. For example, Nepal defines urban and rural areas on the basis of population size only (a settlement of more than 9000 is declared as urban space). Pakistan, Sri Lanka and Bangladesh consider administrative parameters like Municipal Corporation, municipality, town committee or urban council to declare settlement as urban (UN, 2001). On the other hand, China's demarcation of urban and rural space is primarily based on political considerations. In China, town and other adjoining areas are included in urban area by extending the town government seats (Bhagat, 2005). Even in United States, where the percentage share of urban population in total population is more than 75 %, still the rural-urban demarcation is being exercised to decide the allocation of funds for social sector development. The rural-urban distinction in this case is based on the concept of an urbanised area(UA), which includes a central city and the surrounding urban fringe (suburbs) that together have a population of 50,000 or more and a population density generally exceeding 400 persons per square kilometre (UN, 2001).

In India, Census has been entrusted with the task of defining the criteria of rural and urban settlements. The Census classifies rural and urban areas while state governments grant the municipal status to urban centres. The classification is based on mainly agricultural-industrial continuum, whereby 75% of the population requires to be engaged in non-agricultural activities. It only considers male members as the component of workforce as per the amendment made in 1981 census. This creates gender bias in the definition of urban space. Secondly, it excludes workers engaged in fishing, plantations, forestry, hunting and allied activities making the demarcation more industrial biased.

Third, there are different criteria for declaring an area by census as town or urban centres and municipal status by state government. In this case all settlements accorded municipal status are automatically listed as urban centres while urban space defined by Census, may not necessarily be given the status of municipal status. This creates hindrances in level of urbanisation and regional comparisons across the state and also at country level. This would require the Census definition of rural and urban to be modified in view of the requirements of decentralised governance as laid down in Seventy-Fourth Amendment in the constitution in 1992.

Fourth, as towns grow, they engulf the adjoining areas, resulting in suburbanisation. It has brought considerable changes in adjoining rural areas, particularly those near large cities and capital area. The present definition of rural and urban, however, fails to capture such a process as there is no transitional category in the urban definition.

7.4 Policy Implication of the Study

It has been a major task for Indian health care system to provide universal health care to all of its population irrespective of their location and varied socio-economic, demographic and epidemiological profile. Despite various national and international level efforts, India's achievement in terms of health care for all, remains a distant dream. The recently concluded MDGs and upcoming SDGs (which have been implemented since September 2016) have already insisted heavily on improving the health related parameters in African and Asian continents including India. Interestingly, India's health parameters are worse in the field of maternal and child health, especially from the pockets of rural and underserved areas. This requires more of the preventive care at primary level rather for highly sophisticated specialised care. Furthermore, the rapidly changing epidemiological and demographic profile across the globe has been posing serious challenges to meet the demand for growing health

care needs. This has led to the upsurge in demand for skilled medical professionals in the category of basic doctors as well as for the highly specialised physicians. In the same line, Indian health care system has been facing the twin challenges of meeting the basic health requirement of its population and on the other hand the increasing burden of NCDs and life style diseases. The later requires sophisticated techniques and highly specialised manpower to deal with.

In this backdrop, the role of physicians have acquired the centre stage of discussion in almost all the policy documents as well as in researches of health economists and other disciplines of social sciences. Market for physicians in terms of its labour value have characterised it a specific case which is distinct from the other conventionally defined labour markets. It has different institutional set of norms and also the functioning which varies as per the time, context and geographical setting. The rural and urban areas in Indian labour market for physicians have different characteristics. It is important to understand and specify even at the policy level that apart from the widely discussed demand and supply modules, how other factors interact to influence health worker's labour market in terms of their participation in a particular setting. The present study is an attempt to bring out some of the non-monetary factors which may not have the equal effect like monetary factors on the supply decisions of a physician to work in a rural and urban setting. However, their significance can not be undermined, given the institutional and regional structure of health care system in India. In terms of policy outcomes, the major implications can be categorised in two parts. The first is related to internal dynamics of demand and supply and the factors affecting the internal mobility from rural to urban area. Second is related to external factors whereby international migration of physician requires to be seen with different perspective to deal with, especially within Indian context.

For a more comprehensive analysis of supply side dynamics of physicians in Rural and Urban settings

Firstly, Indian health care system have relied more upon the production of physicians at basic level by setting up more medical colleges. This overemphasis on production has led to phenomenal increase and corruption in private medical colleges, while the basic problem of provision of health services has suffered. Production of doctors from private institutions has led to the unequal distribution of physicians at the spatial level. Private medical colleges are moslty situated in urban vicinity, and therefore the health care needs of underserved and

distant rural population suffer, which further lead to decreasing demand of health care from trained professionals. Government requires to look into these kind of anomalies by incorporating the changes in governance and institutional domain.

Second, wages as an instrument is determined by demand and supply conditions for physicians in any particular market. However, this is not as simple for skilled health worker as perceived in neo-classical labour supply framework, especially, if it has to be seen in different time periods and spatial settings. The first challenge is to define the concept of demand in terms of either need based approach or on the basis of what government and individuals are willing to pay for physicians' services. The concept of 'willingness to pay' and 'need' are different from each other in terms of their specification in model as well as in empricisation. 'Willingness to pay' depends upon socio-economic condition of population and resource constraints of governments. On the other hand need based specification is based on epidemiological and demographic concern of the population.

Therefore, at the policy level it has to be seen as to which basis the wage rate could be determined for better functioning in local markets of physicians. There is centralised pay system for doctors and other health workers in India, whereby it is not clear as how government is deciding the pay package for physicians in different settings. It has been argued that it is based on government's ability to pay subject to resource constraint. It also get decided by the level of degree, specialisation and work experience of the physician. While deciding the pay structure of physicians, government may consider for significant non-pecuniary aspects which has may prove more relevant for retaining the physicians in rural and underserved areas. At the same time, government may enhance the demand for their services by creating required infrastructure and awareness in rural areas for opting services from qualified government health professionals. The study has found that in highly underserved areas, people prefer to go for traditional sources of medicine or most frequently to the quacks and fake certificate holding doctors, which shifts the demand pattern of institutional health care.

Third, in case of high skilled physicians wages or salary is not the only factor to be taken into account. So far, it has been observed in practice that to supplant the number of health workers, financial incentives have been taken into account. However, it does not prove much beneficial in many countries suffering from persistent health worker shortages and skewed distribution across the geographical area (Mcpake et al, 2014). The same reason is applied to

figure out as why physicians prefer to go for higher speciality, i.e., they go for higher specialisation for increasing their life time earnings. On the other hand, this may not be applicable to all. Against this backdrop, it can be argued that the customer's valuation of physicians' services can not be determined in terms of wages only. Therefore, the supply of services could not be determined with precision. Furthermore, the elasticity of supply in terms of monetary factors like income or wages could not provide the actual functioning of physicians' labour market in rural and urban areas. Therefore the process of determining the salary structure requires rigorous empirical overhauling from the actual field before implementing any policy.

Increasing the supply of PG in medical health[1] and training of community medicine workers who could serve in rural areas can be corrective measures given the demand pattern of Indian health care. Increasing the supply of specialists through increasing the PG seats in government colleges can be a helpful measure because most of the private colleges do not offer higher specialisation as the costs are comparatively higher. In addition, Indian Medical Education system should produce the 'social physicians' to understand and empathise the need of Indian rural population, as prescribed by earlier policy documents like Bhore committee report. The same has been argued in a recent article of Times of India. The author argued that Medicine being largely an applied science requires certain skills that are developed by observation, practice and experience, which is more or less similar to the arts more than science. But now, especially in India the element of trust is missing from the doctor-patient relationship. In fact, practice of medicine has become a kind of marketing whereby profit maximisation by doctors has taken the centre stage. Therefore, it is required to reverse the process which is now entirely science based leaving the components of Arts and humanities. An infusion of arts in medical education might be the solution to pervasive deafness of medical professionals. MCI needs to consider this aspect while deciding the medical curriculum, whereby social values can be inculcated while equipping them with latest technological skills (Krishnan, TOI, 28th February, 2017).

[1] In a recent move to correct the imbalance of secondary and tertiary level care, government has approved for increment of 4000 PG seats in medical colleges of India. After the Centre's announcement during the recent Budget of 2017-18, Union Health Minister JP Nadda has approved for 4000 PG seats including the increment in DNB (Diplomate of National Board, which is equivalent to MD/MS courses) seats. This will take the total number of seats in PG courses at 35,117. Centre has proposed the creation of additional 5,000 PG seats every year from this budget session with an aim to augment the availability of specialist doctors at secondary and tertiary levels. Ministry has also emphasised on rolling out the DNB courses in district level hospitals and reputed private hospitals and medical colleges (3rd March 2017, The Indian Express).

Fourth, In Indian case, the concept of compensating wage differential, whereby government offers compensation in terms of monetary benefits to the physicians for working in rural and underserved areas, does not seem to be much effective. Reasons lie in elasticity of supply with respect to non-pecuniary incentives and simultaneity of various monetary and non-monetary factors. Even the determination of earning function includes various other socio-demographic and non-pecuniary job characteristics besides human capital characteristics to influence not only the wage rate but preferences of physician to provide their services. Modelling into the line of economic approach while taking into other non-economic aspects in health worker's utility function, allow us to understand various issues of health worker's individual preference to supply labour in rural/urban area.

International Mobility of physicians require different and fresh perspective to capitalise the gains from their foreign experiences

International migration of physicians at different levels requires long awaited policy overhauling from Indian policy makers. Lack of coherency in policy debates is observed because of scarcity of the relevant data for those medical professionals migrating abroad and also returning back. The international migration is now seen as an outcome of global demand whereby India and other LMICs are acting the supply base for health workers. The developed and better off nations have been going through their own demographic transition and thereby developing a caring economy. The emerging "care economy" in these developed nations require health professionals to cater the demand of health care from ageing populating. This acts as the pull factor for the health personnel of developing economy. This requires fresh perspective to analyse apart from the conventional notion of push and pull factors.

This study has further depicted that many of the doctors who return back from abroad by acquiring various professional degrees in medicine have to face very tough competition to get license for practice. This policy is selective as it applies to countries like Nepal, Bangladesh, Russia, Singapore, China etc. Those health professionals, who get their medical degrees from these countries, have to face difficulties and administrative bottlenecks while getting license from practising in India. Health professionals who return by acquiring degrees from these countries can be asked to serve in rural or underserved areas on rotation basis and this could be one of the criteria for issuing them the license instead of going of paper based rigorous tests. Their performance can be judged on the basis of quality of health care which

they provide to the patients. Given the need of health workers, it may be a viable option to facilitate them for practising in India, along with proper monitoring.

7.5 Limitations and Suggestions for Future Research

The study has witnessed certain limitations in terms of its conception as well as for various methodological issues. Researcher had to face difficulty in acquiring the required information and data from the field survey, as physicians were not comfortable in revealing their actual income and also other preferences. Some of the physicians have not turned up fr the interview process. Also, it was difficult to track them for interviews in rural and interior areas as most of them were not present at the health centres.

The study being explorative in nature, have not intended to measure the utility of physicians derived from non-pecuniary factors or any comparison of the amount of utility from one factor to another. It has been argued through this study that before measuring the utility, it will be pre-emptive to provide those variables and suitable proxies which can have a probable impact on physicians' supply decisions. Application of economic approach to the non-economic field requires understanding of those proxies which can be applied in the model or equation to analyse the labour supply decision of an individual in a particular context.

The study has further observed the heterogeneity in choices for working in rural or urban area and many of the pecuniary and non-pecuniary factors were simultaneously competing with each other. Also, within the domain of non-pecuniary factors, some of them are interrelated to each other and their specification remains blurred under certain specific category. For example, gender can be a demographic as well as social factor for affecting the choice of an individual to supply his or her labour in certain given conditions like rural setting. Bureaucracy as an institutional factor is also result of political set up which can be a component of policy level functioning.

The study further proposes for more empirical investigation in those areas where the characteristics of rural and urban areas are intermingled. There is no well defined demarcation of rural and urban areas, towns and those clusters which remain in between. The criteria used by Census and other related organisational reports are restricted to only certain parameters which is not sufficient to define the rural and urban set up.

For the policy level there is need to enquire about the concept of compensating wage differential and market adjusted determination for physicians' wage rate. There can be further experimental study to measure the impact of compensating wage for adjusting the major non-pecuniary variable affecting the working in underserved areas. Till now no experimental study is conducted to validate the claim of compensating wage differential in context of India as par the knowledge of researcher. It can further enrich the theory in terms of substitution between economic and non-economic factors.

It has to be seen as which non-pecuniary factor's response can be measured or figured out in terms of its relation with the elasticity of supply. The micro-level perspective becomes significant while measuring the elasticity of supply. However, it has been observed that both macro and micro level factors have been operating simultaneously to produce the impact. Therefore it is difficult to separate both the domains while analysing the utility function of an individual physician.

Concept of labour productivity and labour efficiency require more analytical approaches to comprehend specifically in Indian context. So far, none of the mentioned studies have addressed this concern. It requires to be seen in both the cases of rural and urban physicians for how various monetary and non-monetary factors are associated with their productivity and efficiency.

In case of privately practicing physicians, experimental study refined can be applied to study their labour supply behaviour and determinants.

The dynamics of production and availability of health worker requires understanding from both micro {individual preference, cost (direct + indirect), internal and international mobility} and macro level (economic, institutional and political perspectives) determinants. While discussing about policy interventions for ensuring the availability of Government employed physicians in rural and urban areas many non-wages factors are required to bring into the utility function of physician. The overlapping of monetary and non-monetary factors requires study from substitution point of view and not only in terms of leisure and income as proposed by conventional neo-classical theoretical framework.

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Appendix: I

Registration of Doctors by State Medical Council, 2010 & 2015

State Medical Council	2010		2015	
	No of Doctors	Percentage	No of Doctors	Percentage
Maharashtra Medical Council	110739	14.64	132667	14.12
Karnataka Medical Council	71042	9.39	96565	10.28
Tamil Nadu Medical Council	63690	8.42	87373	9.30
Uttar Pradesh Medical Council	53406	7.06	66633	7.09
West Bengal Medical Council	56986	7.54	64708	6.89
Andhra Pradesh Medical Council	46019	6.09	58255	6.20
Gujarat Medical Council	43382	5.74	55201	5.87
Medical Council of India	35150	4.65	52458	5.58
Punjab Medical Council	37272	4.93	43922	4.67
Travancor Medical Council, cochin	36346	4.81	42072	4.48
Bihar Medical Council	35897	4.75	38378	4.08
Rajasthan Medical Council	26468	3.5	31126	3.31
Madhya Pradesh Medical Council	25006	3.31	30567	3.25
Assam Medical Council	17847	2.36	21342	2.27
Orissa Council of Medical Registration	16340	2.16	19615	2.09
Madras Medical council	17877	2.36	17877	1.90
Bombay Medical Council	15074	1.99	15088	1.61
Jammu & Kashmir Medical Council	10317	1.36	13561	1.44
Hyderabad Medical Council	12265	1.62	12267	1.31
Delhi Medical Council	5081	0.67	11601	1.23
Mysore Medical Council	8426	1.11	8428	0.90
Chattisgarh Medical Council	2088	0.28	5846	0.62
Uttaranchal Medical Council	19	0	5437	0.58
Haryana Dental & Medical Council	3807	0.5	5400	0.57
Jharkhand Medical Council	1694	0.22	4692	0.50
Goa Medical Council	2605	0.34	3331	0.35
Himachal Pradesh	NA	-	1535	0.16
Vidarbha Medical Council	1339	0.18	1338	0.14
Sikkim Medical Council	NA	-	939	0.10
Arunachal Pradesh	NA	-	670	0.07
Total	756,182	100	939750	100.00

Source: MCI(2011) and MCI (2016).

Appendix II

Medical Institutions in UP (Public and Private) with Seats in UG& PG Levels

No	Name of Institution	Established	MBBS Seats	PG Seats	Type of Inst.
1	Baba Saheb Dr. Bhimrao Ambedkar Medical College and Associated Hospital, Kannauj	2012	100		Govt.
2	BRD Medical College, Gorakhpur	1972	50	34	Govt.
3	Career Institute of Medical Sciences & Hospital, Lucknow	2011	100		Trust
4	Chhatrapati Shahuji Maharaj Medical University, KGMC, Lucknow	1911	250	208	Govt.
5	Command Hospital, Lucknow			20	Govt.
6	Era Medical College, Lucknow	1997	150	72	Trust
7	GSVM Medial College, Kanpur	1955	190	111	Trust
8	Hind Institute of Medical Sciences, Barabanki	2009	100		Trust
9	Institute of Medical Sciences, BHU, Varanasi	1960	59	99	Govt.
10	Institute of Mental Health and Hospital, Agra			2	Govt.
11	Jawaharlal Nehru Medical College, AMU, Aligarh	1961	150	169	Govt./Univ.
12	LLRM Medical College, Meerut	1966	100	67	Govt.
13	Mahamaya Rajkiya Allopathic Medical College, Ambedkarnagar	2011	100		Govt.
14	Maharani Laxmi Bai Medical College, Jhansi	1968	100	46	Govt.
15	Major S D Singh Medical College and Hospital, Farukkabad	2011	100	–	Trust
16	Mayo Institute of Medical Sciences, Barabanki	2012	150		Trust
17	Moti Lal Nehru Medical College, Allahabad	1961	100	62	Govt.
18	Muzaffarnagar Medical College, Muzaffarnagar	2006	150	3	Trust
19	Rama Medical College and Hospital,	2008	100	13	Trust

	Kanpur				
20	Rama Medical College Hospital and Research Centre, Hapur	2011	150		Trust
21	Regional Institute of Opthalmology, Sitapur			15	Govt.
22	Rohilkhand Medical College & Hospital, Bareily	2006	150	27	Trust
23	S N Medical College, Agra	1939	150	87	Govt.
24	Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow	1983		75	Govt.
25	Santosh Medical College, Ghaziabad	1996	100	61	Trust
26	Saraswati Institute of Medical Sciences, Hapur	2008	100		Trust
27	School of Medical Sciences & Research, G. Noida	2009	100		Trust
28	Shri Ram Murti Smarak Institute of Medical Sciences, Bareily	2005	100	52	Trust
29	Subharti Medical College, Meerut	1996	150	68	Trust
30	Teerthankar Mahaveer Medical College, Moradabad	2008	100		Trust
31	U.P. Rural Institute of Medical Sciences & Research, Etawah	2006	128	4	Govt.
32	Rajkiya Medical College, Jalaun		100		Govt.
33	Rajkiya Medical College, Saharanpur		100		Govt.
34	Rajkiya Medical College, Azamgarh		100		Govt.
35	KD Medical College & Research, Mathura	2015	150		Society
	Total		3727	1295	

Appendix III

District-wise Availability of Health Centres in Districts of UP

District	Sub-Centres	PHCs	CHCs	Sub-Divisional Hospital	District Hospital
Agra	383	60	16	0	2
Aligarh	351	47	13	0	3
Allahabad	539	80	19	0	5
Ambedkarnagar	232	33	9	0	1
Amethi	271	50	15	0	0
Aurayya	164	32	7	0	1
Azamgarh	490	90	22	0	2
Badaun	370	55	12	0	2
Baghpat	200	27	7	0	1
Bahraich	310	63	14	0	2
Balia	367	83	15	0	2
Balrampur	214	33	9	0	2
Banda	285	54	7	0	2
Barabanki	353	67	17	0	2
Bareilly	413	64	13	0	3
Basti	267	44	9	0	4
Bijnor	353	53	11	0	2
Bulandshahar	390	69	13	0	4
Chandoli	244	33	5	0	2
Chitrakoot	140	33	6	0	1
Deoria	364	77	16	0	2
Etah	175	36	4	0	2
Etawah	169	34	8	0	3
Faizabad	255	38	10	0	3
Farrukhabad	192	32	8	0	2
Fatehpur	309	48	9	0	2
Ferozabad	240	59	7	0	3
Gautam Budhnagar	107	21	5	0	1
Ghaziabad	144	20	4	0	3
Ghazipur	393	73	16	0	2
Gonda	338	66	16	0	2
Gorakhpur	448	79	16	0	2
Hamirpur	215	41	8	0	2
Hapur	148	25	4	0	0
Hardoi	432	62	13	0	2
Hathras	147	32	7	0	3

Jalaun	286	39	7	0	2
Jaunpur	499	92	21	0	3
Jhansi	326	44	6	0	2
JP Nagar	172	29	8	0	2
Kannauj	188	34	11	0	1
Kanpur (Dehat)	217	36	11	0	2
Kanpur (Nagar)	390	44	10	0	4
Kashganj	170	36	5	0	1
Kaushambi	170	36	7	0	1
Khiri/ Lakhimpur	387	70	14	0	2
Kushinagar	339	67	14	0	1
Lalitpur	191	29	5	0	2
Lucknow	336	35	9	0	11
Maharanganj	278	46	14	0	1
Mahoba	140	18	4	0	2
Mainpuri	203	55	9	0	2
Mathura	261	37	12	0	3
Mau	225	45	6	0	2
Meerut	293	42	12	0	2
Mirzapur	265	47	13	0	2
Moradabad	286	35	6	0	2
Muzzafarnagar	286	47	7	0	2
Pilibhit	195	29	6	0	2
Pratapgarh	360	65	27	0	2
Raibareilly	277	54	12	0	2
Rampur	211	32	5	0	2
Saharanpur	338	48	13	0	3
Sambhal	131	34	8	0	1
Sant Ravidas Nagar	155	21	6	0	2
Sant Kabirnagar	182	26	6	0	1
Shahjahanpur	310	51	13	0	2
Shamli	130	28	5	0	0
Shrawasti	133	17	6	0	1
Siddharthnagar	274	70	11	0	1
Sitapur	448	78	17	0	2
Sonbhadra	165	32	6	0	1
Sultanpur	232	54	11	0	2
Unnao	348	52	12	0	2
Varanasi	312	30	8	0	5
Total	20521	3497	773	0	160

Source: RHS Bulletin 2015

Appendix IV

Questionnaire

Questionnaire

I Nicky Naincy, hereby declare that all the questions asked in this questionnaire will not be used for any other purpose except research work.

Thank you for your cooperation.

Nicky Naincy
PhD Scholar
Jawaharlal Nehru University
New Delhi

Physicians Practice Survey

Part I: Demographic and Social Particulars

1. **Name-**
2. **Gender-**
3. **Religion-**
4. **Age-**
5. **Home town/Birth Place-**
6. **Caste-**

General	OBC	SC	ST	Any Other

7. **Marital Status-**

Married	Single	Divorcee	Widow/Widower

8. **Household Particulars-**

Member	Sex	Education (General)	Technical/Professional	Occupation

Part II: Education and Economic Particulars

9. Household Monthly Income-

10. Did you have any coaching for getting into Medical College?
11. How much you paid for the coaching? (including other expenses like accommodation)-
12. What was the time duration for your coaching?
13. Time period between passing the +2 and getting enrolment in medical college
14. Name of the Medical College you receive your Medical Education? –

15. Type of Medical College- 1-Private 2- Government
16. Location of Medical College 1- India 2- Abroad (Name of Country/Province- .....
17. If in India, then location of the medical college (name and location)-

18. Fee that you paid to institution (per semester/year tuition fee)
19. Fee excluding tuition fee like accommodation/ mess/hostel etc....
20. Any other expenses....
21. Source for your expenditure on Medical Education (Aggregate)- 1- Self Finance 2- Educational Loan 3- or any other source (Scholarship/ Part time job)-
22. If Educational Loan, then amount of the loan..... and source of the loan.....

23. What is the type your degree- 1-Diploma 2- Degree
24. If degree, then 1- Bachelor 2- Masters
25. What is your further specialisation (Masters)
26. If Diploma, then what is the duration of your diploma?
27. Specialisation in the field of Diploma?

Part III: Physician Employment related Particulars

28. Are you registered from State council or Medical Council of India?
29. What is the Location of the practice? 1-Rural, 2- Urban
30. Do you have familiarity with rural area- Yes/No
31. Institution, from which you are associated-

Government Hospital	
Private Hospital	
Private Clinic (Self)	
Privately Run Multi Speciality Hospital	
As an Intern	
Any other (please specify)	

32. Reasons for preferring Government Service (tick the choice)

(a) Consistent Salary

(b) Reputation of being a Government Doctor

(c) Job security

(d) Pension and other allowances

(e) Other facilities

(f) Any other reason

33. Income (per month , please mention your pay scale)-

34. In Urban Area, then what motivates you to practice there?

(a) Better working conditions

(b) Better Infrastructure

(c) Basic amenities and other living facilities

(d) Salary

(e) Living with family

(f) Lesser workload

35. Problems in working in rural area-

    (a) Workload

    (b) Lack of proper infrastructure

    (c) Lack of basic facilities

    (d) Lack of equipments

    (e) Insufficiency of Auxiliary Staffs

    (f) Lack of professional development

    (g) Any other

36. Since how many years you have been practising medicine in this Country/State/Locality?

37. Have you ever been to abroad? If yes, then please mention duration of stay -

Purpose	Duration of Stay (Year and Month)
Internship	
Doctoral Degree	
Post Doctoral Research	
Exchange Programme	
Visiting Fellow	
Any Other Purpose	

38. Distance of hospital from your home.
39. Number of Beds, Equipments, other Technical Facilities and Ancillary staff in the hospital

Number of other Doctors	
Number of non-medical Staff	
Number of Nurses	
Number of Beds	
Technical Equipments and other items important for treatment	1- Satisfactory, 2- Less Satisfactory, 3-Dissatisfied
Availability of Pathological Lab	1- Hospital Owned, 2- Private, 3- Not Available

40. Incentive/Complain with Current Working Situation- (tick the choice)

(a) Salary
(b) Infrastructure
(c) Equipment
(d) Auxiliary Staffs
(e) Workload
(f) Bureaucratic Factors
(g) Any Other
(h) None

41. Are you satisfied with your pay scale or income? 1- Satisfied, 2- Less Satisfied, 3- Not Satisfied
42. Which factor is responsible for the dissatisfaction within the salary structure?
    a. Compensatory allowance for serving in rural area
    b. Basic pay scale
    c. Insufficiency of HRA
    d. Insufficiency of DA/TA
    e. Any other (please specify)
43. Do you avail basic amenities at the site of your hospital or clinic?

34. Do you live with your family while practising in a particular area?

35. What are your future prospects or aspirations or you are satisfied with your current position?

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36. If you get a chance to shift or practise in any other area, what would be your preference?

Where your family resides	City of your choice	Rural or Remote Area	Any other (Foreign)

36. Why you choose Medicine as Career? Tick the box.
a. Family Aspirations
b. Own aspirations to become a doctor
c. Social Service/Welfare
d. Good reputation of being a doctor in society
e. Good earning possibility/Salary
f. Prospect of getting good marriage partner
g. Any other (please mention)

37. How do you see below listed political and bureaucratic factors affecting the working condition?

a. Appointments
b. Bribery for promotion
c. Issue of transfer/ posting
d. Hindrance to career progression
e. Any other

38. Do you think social factors are important for working in any particular location?

Yes/No

39. If yes, then which is more important, given the option below.

a. Social recognition
b. Social Environment
c. Personal Motivation
d. Home Town Factor
e. Community Preference
f. Any other (please specify)