NUTRITIONAL STATUS OF CHILDREN OF WORKERS IN TEA GARDENS OF DARJEELING

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DECLARATION

I, Dipika Subba, hereby declare that the thesis entitled "**NUTRITIONAL STATUS OF CHILDREN OF WORKERS IN TEA GARDENS OF DARJEELING**" submitted by me for the award of the degree of **DOCTOR OF PHILOSOPHY** is my bonafide work, and it has not been submitted so far in part or in full for any degree or diploma of this university or any other university.

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CERTIFICATE

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ABBREVIATIONS

AWCs	Anganwadi Centers
AWWs	Anganwadi Workers
BMI	Body Mass Index
CIAF	Composite Index of Anthropometric Failure
DLHS	District Level Household Survey
FAO	Food and Agricultural Organisation
ICDS	Integrated Child Development Services
IFPRI	International Food Policy Research Institute
IYCF	Infant and Young Child Feeding
MDG	Millennium Development Goals
MWCD	Ministry of Women and Child Development
MHFW	Ministry of Health and Family Welfare
NCHS	National Council for Health Statistics
NDC	National Development Council
NFHS	National Family Health Survey
NIPCCD	National Institute of Public Cooperation and Child Development
NNMB	National Nutrition Monitoring Bureau
OBC	Other Backward Class
PPS	Probability Proportional to Size
SC	Schedule Caste
SLI	Standard of Living Index
ST	Schedule Tribe
UNICEF	United Nations Children's Funds
WFP	Work Force Participation
WHO	World Health Organisation

CHAPTER -1

CHAPTER 1

INTRODUCTION

1.1 Introduction

Nutritional status is the major determinants of health and well-being of children. Malnutrition has been increasingly recognised as a prevalent and important health problem in many developing countries. Although the share of malnourished children has gradually been declining over the past 25 years, the actual number of malnourished children is still rising in many countries (Smith and Haddad, 2000). It continues to be a cause of ill-health and mortality among children. "An adult who has survived malnutrition as a child are physically and intellectually less productive and suffer from more chronic illness and disability" (UNICEF, 1998). They become less productive and earn less than their healthy peers, and the cycle of poverty and undernutrition repeats itself from generation to generation. It commonly affects all ages, but infant and young children are the most vulnerable because of their high nutritional requirements for growth and development (Blössner and de Onis, 2005). Pregnant women are another group of concern where malnourished mother is at high risk of giving low birth weight baby who will be prone to growth failure during infancy and be at high risk of morbidity and early death. Further, malnourished girls are also at higher risk of becoming a malnourished mothers, thus contributing to intergenerational cycle of malnutrition.

The term malnutrition refers both to under-nutrition and over-nutrition, but commonly it refers to undernutrition (Blössner and de Onis, 2005). UNICEF defines under-nutrition as the outcome of insufficient food intake and repeated infectious diseases. It includes the child being underweight for one‘s age, too short for one‘s age (stunted), dangerously thin for one‘s height (wasted), and deficient in vitamins and minerals (micronutrient malnutrition). It is a global epidemic that affects millions of people each year. In 2015, about 92 million i.e. 15 percent children of under five years of age were underweight according to the WHO growth standard. The prevalence is highest in the UN region of South East Asia with 27 percent, followed by Western Africa with 20 percent, Oceania and Eastern Africa both with 18 percent, South-Eastern Asia, and Middle Africa with 15 percent, and Southern Africa with 11 percent (World

Health Organisation, 2015). Globally, about 155 million (23 percent), 52 million (7.7 percent), and 41 million (6 percent) children are stunted, wasted and overweight (UNICEF, WHO, and World Bank Group, 2016). "Almost five million children under the age of five die of malnutrition-related causes every year" (Food and Agricultural Organisation of the United Nations, 2015). It is one of the greatest threats to public health in the world. "It takes an uneven toll on poor women and their children, leading directly or indirectly to an estimated 45 percent of all child deaths" (World Health Organisation, 2015).

Definitions of Anthropometric Indicators:
(United Nation Children's Fund, 2013)

- Stunting reflects chronic undernutrition during the most critical periods of growth and development in early life. It is defined as the percentage of children aged 0 to 59 months whose height for age is below minus two standard deviations (moderate and severe stunting) and minus three standard deviations (severe stunting) from the median of the WHO Child Growth Standards.
- Underweight is a composite form of undernutrition that includes elements of stunting and wasting. It is defined as the percentage of children aged 0 to 59 months whose weight for age is below minus two standard deviations (moderate and severe underweight) and minus three standard deviations (severe underweight) from the median of the WHO Child Growth Standards.
- Wasting reflects acute undernutrition. It is defined as the percentage of children aged 0 to 59 months whose weight for height is below minus two standard deviations (moderate and severe wasting) and minus three standard deviations (severe wasting) from the median of the WHO Child Growth Standards.
- Severe acute malnutrition is defined as the percentage of children aged 6 to 59 months whose weight for height is below minus three standard deviations from the median of the WHO Child Growth Standards or by a mid-upper-arm circumference less than 115 mm, with or without nutritional oedema.
- Overweight is defined as the percentage of children aged 0 to 59 months whose weight for height is above two standard deviations (overweight and obese) or above three standard deviations (obese) from the median of the WHO Child Growth Standards.
- Low birthweight is defined as a weight of less than 2,500 grams at birth.

Developing countries suffer more incidence of malnutrition compared to the developed countries. Asia and Africa bear the greatest share of all forms of malnutrition (UNICEF, WHO, and World Bank Group, 2016). In 2016, 56 percent, 49 percent and 69 percent of global children under 5 were stunted, overweight and

underweight in Asia respectively. Out of total stunted children, two out of five lives in Southern Asia. Five United Nations Sub-regions i.e. Southern Asia, Eastern Africa, Middle Africa, Western Africa, and Oceania have rates of stunted children of more than 30 percent. The level of wasting is highest in South Asia Region. Out of total wasted children, more than half live in Southern Asia. In three sub-regions, i.e. Northern Africa, Southern Africa, and Central Asia at least one in every ten children under five is overweight (Table 1.1).

Table 1.1 United Nations Sub Region-wise Nutritional Status of a Child

	Stunted (Percentage)	Overweight (Percentage)	Wasted (Percentage)
Global	22.9	6.0	7.7
United Nations			
Developing Regions[1]	25.0	5.5	8.4
Africa	31.2	5.2	7.4
Eastern Africa	36.7	4.7	6.5
Middle Africa	32.5	4.7	7.3
Northern Africa	17.6	10.0	7.9
Southern Africa	28.1	11.8	5.5
Western Asia	31.4	3.0	8.5
Asia[2]	23.9	5.5	9.9
Central Asia	12.5	10.7	3.8
Eastern Asia[2]	5.5	5.3	1.9
Southern Asia	34.1	4.4	15.4
South-eastern Asia	25.8	7.2	8.9
Western Asia	15.7	8.0	3.9
Latin America and Caribbean	11	7.0	1.3
Caribbean America	5.3	6.9	3.0
Central America	15.4	6.0	0.9
South America	9.5	7.4	1.3
Oceania[3]	38.3	9.6	9.4

[1] Developed regions are not displayed coverage due to insufficient population
[2] Excluding Japan
[3] Excluding New Zealand and Australia
Source: UNICEF, WHO, World Bank Group- Joint Child Malnutrition Estimates 2017 edition.

1.2 Malnutrition in India

India's under-nutrition statistics are worse than Sub-Saharan Africa. Although, India being fastest growing economies in the world, improvement in health and nutrition sector has been sub-optimal (Ramachandran, 2010). It is also the home of a highest number of undernourished children in the world. Prevalence of malnutrition among

children in India is one important botheration for the policy makers (Das and Subba, 2015). In spite of several welfare schemes like Integrated Child Development Scheme (ICDS) where the primary aim is to improve nutritional and health status of children aged 0-6 years, the prevalence of malnutrition is still alarmingly high in India. National Nutrition Monitoring Bureau in its report has shown that proportion of stunting has decreased from 82 percent to 46 percent between 1975-79 and 2011-12 periods. During the same period, wasting has decreased from 27 percent to 16 percent and similarly, underweight from 76 percent to 41 percent. The National Family Health Survey, one of the largest health surveys in India showed that there is a significant progress in the child's nutrition from 1992-2016. According to the fourth rounds of NFHS data (2015-16), it is observed that 39 percent of children under age five years are stunted which means children are too short for their age and are chronically malnourished. 15 percent of children under five years are wasted (child being too thin for his or her height) which indicates one in every five children are acutely malnourished, and almost one-third of total children are underweight for their age.

Although a decline in child nutritional status in India has accelerated since 2006, the rates are still quite low to achieve the global nutrition targets as adopted by World Health Assembly. India's nutritional status lags behind many poorer countries of Africa, and at the current rate of decline, India will achieve the current stunting rates of Ghana by 2030 and that of China by 2050 (IFPRI, 2016). Further, child nutritional status in India varies markedly across its states. Table 1.2 shows the list of states according to the nutritional status of a child, as revealed by NFHS IV (2015-16).

Many factors can contribute to high rates of child undernutrition. The common perception that poverty and food security are sole causes of undernutrition does not hold true in the Indian context. Multiple and interrelated factors are responsible for child undernutrition. "It is a result of the complex interplay of factors involving diverse elements as household access to food, child and maternal care, good hygiene practices, safe drinking water, and access to basic health services" (UNICEF, 1998 as in Das and Subba, 2015).

Table 1.2 State-wise Nutritional Status of Children, NFHS IV (2015-16)			
States	Stunted	Wasted	Underweight
Andhra Pradesh	31.4	17.2	31.9
Arunachal Pradesh	29.4	17.3	19.5
Assam	36.4	17	29.8
Bihar	48.3	20.8	43.9
Chhattisgarh	37.6	23.1	37.7
Delhi	32.3	17.1	27
Goa	20.1	21.9	23.8
Gujarat	38.5	26.4	39.3
Haryana	34	21.2	29.4
Himachal Pradesh	26.3	13.7	21.2
Jammu and Kashmir	27.4	12.1	16.6
Jharkhand	45.3	29	47.8
Karnataka	36.2	26.1	35.2
Kerala	19.7	15.7	16.1
Madhya Pradesh	42	25.8	42.8
Maharashtra	34.4	25.6	36
Manipur	28.9	6.8	13.8
Meghalaya	43.8	15.3	29
Mizoram	28	6.1	11.9
Nagaland	28.6	11.2	16.8
Orissa	34.1	20.4	34.4
Punjab	25.7	15.6	21.6
Rajasthan	39.1	23	36.7
Sikkim	29.6	14.2	14.2
Tamil Nadu	27.1	19.7	23.8
Telangana	28.1	18	28.5
Tripura	24.3	16.8	24.1
Uttar Pradesh	46.3	17.9	39.5
Uttaranchal	33.5	19.5	26.6
West Bengal	32.5	20.3	31.5

Source: NFHS IV, 2015-16

1.3 Literature Review

In the field of child health, child nutrition has gained enormous significance. Significant research has been carried out on this topic at global, national and regional level. Studies consistently showed that socio-economic, demographic, cultural, environmental, and biological factors are important factors associated with child nutrition. “The adequate maternal nutrition before and during pregnancy and lactation, access to affordable and nutrient rich food in early childhood, appropriate maternal and child care practices, adequate health services, and a healthy environment

including access to safe water, sanitation and good hygiene practices are the key ingredients that can free children from all forms of malnutrition" (UNICEF, WHO, and World Bank Group, 2016).

1.3.1 Socio-demographic Factors

Several studies both at global and national level have tried to explore the association between socio-demographic factors and nutritional status of a child (Kaushik et al., 2012; Kirsten et al., 2013; Kumar et al., 2015; Tigga et al., 2015; Omondi and Kirabira, 2016). Socio-demographic factors include household, mother and child characteristics.

Child's Characteristics and its linkage with Child Nutrition: The child's characteristics have a strong bearing on the nutritional status of a child (Van de Poel et al., 2007; Omilola, 2010). Huge variation in nutritional status with child's ages has been observed. The older children are more prevalent to malnutrition compared to younger children especially in case of stunted and underweight. Inappropriate child feeding practices or an increased morbidity could be the reason behind the higher proportion of malnutrition among older children (Amugsi et al., 2013). As compared to children age 6-35 months, children less than six months were less likely to be stunted, wasted and underweight (Glover-Amengor et al., 2016). In a study conducted by Yasoda and Geervani (1998) in the Medak district of Andhra Pradesh, it was found that the child in an age group of 13-36 months which is the period immediately following weaning was severely malnourished. The rate of stunting is highest in 12-23 months as it is the age at which children cease to breastfed and are exposed to contaminated food, water, and environment (Zereyesus et al., 2012; Glover-Amengor et al., 2016).) The continuous increase in the level of stunting after 24 months may be indicative of long-term consequences of receiving inadequate food over a prolonged period of time (Leroy et al. 2014). However, the study conducted by Amugsi et al. (2013) in Ghana observed a declining trend in the malnutritional status of a child especially in the case of wasted due to efficient improvement in the quality and availability of food, and other care practices. A similar finding was observed by Ballweg (1972) where the proportion of children under two year were four times severely malnourished than the children who were above five years of age. With the

variation in child age and sex, prevalence of child malnutrition also varies (Van de Poel et al., 2007).

Further, sex of a child joins the debate of many authors where some studies completely rule out the significance of child's sex while other proved as a key factor in determining the nutritional status of the child (Wamani et al., 2007). Omondi and Kirabira (2016) revealed that the sex of a child has no significant association with nutritional status of the child. In the study conducted by Glover-Amengor et al. (2016) in Ghana indicated no significant relation between stunted and underweight children by sex exists. However, male child was more likely to be wasted as compared to female child. A similar finding was observed by Abuya et al. (2012) in the study conducted in the slum of Nairobi where the probability of male child was 57 percent more likely of being stunted compared to female child. Whereas the study conducted by Tigga et al., (2015) in North Bengal observed that baby girl is at higher risk of wasting as compared to boys. Discrimination in diets and basic amenities against girls in India has been reported in numerous studies as significant factors of undernutrition (Bose et al., 2007; Mondal and Sen, 2010). Several other studies also indicated that in rural India compared to boys, girls are more likely to be undernourished (Choudhury et al., 2000; Roy, 2000). However, it is also documented that gender differences with regards with malnutrition exist in low socio-economic status settings (Abuya et al., 2012).

Household's Characteristics and its Linkage with Child Nutrition: Household size also determines the nutritional status of a child. A study conducted by Solomon et al. (2008) in Ethiopia indicated that children from larger household were more exposed to malnutrition. A child from families with three or more siblings is more likely to be undernourished than a child less than two (Hien and Kam, 2008). Larger the number of children present in the family, the available portion of resources will have to be shared. Further, it has also been found that compared to the mother with fewer children, mothers with many children have overall lesser time to extend care equally to each of her children (Kamal, 2011). However, the study by Ayaya et al. (2004) indicates that household size does not have a significant influence on the nutritional status of a child. A study conducted by Cowan and Dhanoa (1983) in Punjab, found that all the children who were undernourished were unwanted females

irrespective of their family size and birth order. Similarly, Desai and Alva (1998) mentioned that birth order does not seem to be associated with child malnutrition, but a majority of studies show that there is a negative influence of birth order on the nutritional status of the child. The study conducted by Horton (1988) documented that birth order effects are stronger among stunted children which represent long-term nutritional status and less among wasted child which only represent current nutritional status. Some studies also reported reasons for favouring the first order while other studies favour the last born children. Hatton and Martine (2010) reveal that first born children have better nutritional status because they get more time and resources of their parents as they do not have siblings and get undivided time for a certain period of time. A study conducted in Thailand showed a contradictory finding where with an increase in the birth order, nutritional status of a child increases because mother with higher birth order are experienced regarding place and method of delivering, and are more aware of importance of breastfeeding.

Some studies have also revealed that child born in ethnic minorities is more likely to be undernourished. Tigga et al. (2015) documented that malnutrition remained a major problem among both tribal and non-tribal children belonging to the lower socio-economic group in India. Studies have reported that tribal children belonging to the economically lower segment were more likely to be undernourished as compared to the children belonging to general caste (Som et al., 2006; Mondal and Sen, 2010). The importance of the availability of better sanitation facility in tribal community to fight back malnutrition has also been revealed. The children belonging to the tribal community having no sanitation facility are highly vulnerable to under-nutrition (Tigga et al., 2015). Religion also influences the nutritional status of a child. The study shows that the concept of religion has a significant association with child's nutrition (Omondi and Kirabira, 2016). The strong influence of religion on food consumption pattern may indirectly influence nutritional status as some religious doctrines restrict consumption of certain foods (Adeladza, 2009).

Mother's Characteristics and its Linkage with Child Nutrition: The available literature suggests that there exist a significant relationship between mother's characteristics and nutritional status of the child. Amugsi et al. (2013) in their study observed that mother's age is significantly associated with nutritional status of a child.

Many studies have also widely recognised the role of mother's education in enhancing nutritional status of a child (Kabubo-Maraira et al., 2008; Asenso-Okyere et al., 1997). Caldwell, (1979) suggested a pathway by which mother's education might enhance child survival through enhanced economic status. The linkage between mother's health and nutritional status of a child is also documented in numerous studies. The low birth weight indicates that the mother was malnourished (Mamidi et al., 2011; Ramachandran and Gopalan, 2011). The study conducted by Arulampalam et al. (2016) mentioned that mother's health is reflected in health outcome of a child. Ramalingaswasmi et al. (1996) in his study documented that "the low birth weight reflects mother's condition, particularly their health and nutrition not only during pregnancy but over the whole of their childhood and young lives." Children with thinner mothers are more likely to be undernourished than the children whose mother has better or moderate BMI (Kamal, 2011).

Mother's Education and its Linkage with Child Nutrition: The strong linkage between mother's education and nutritional status of a child is recognised in numerous literature (Asenso-Okyere et al., 1997; Kabubo-Maraira et al., 2008; Omondi and Kirabira, 2016). The children born to educated mother suffer less malnutrition. With the increase in the level of mother's education the incidence of malnutrition decreases (Omondi and Kirabira, 2016). Som et al. (2006); Tigga et al. (2015) indicated that education improves the ability of mother to use better health services, provide better child health care, have increased knowledge of appropriate child rearing, better hygiene practices and high social status in the family which ultimately influence the child health outcome. Thomas and Strauss (1991) highlighted three mechanisms through which mother's education might affect child health outcome i.e. information processing effects, income augmentation effects, and interactive effects with community service. Glewwe (1999) considered mother's health knowledge as important predictor through which mother's education affects child health outcomes.

Health should be a part of the school curriculum at a young age so that girl will have knowledge even if she drops out of school. Webb and Block (2004) "found that a mother's nutritional knowledge is a determinant of a child short-term nutritional status whereas her schooling is a determinant of long-term nutritional status".

Another aspect of the study deals with the effectiveness of link between mother's education and nutritional status of the child. Some studies argue that mother's education influence child nutrition through intermediate linkage. It acts as a proxy for better health systems, higher socio-economic status and a range of favorable health behaviors (Desai and Alva, 1998; Glewwe, 1999). The strong link between mother's education, socioeconomic status, and nutritional status of the child has also been observed in some studies. Educated women are more likely to get better jobs, to get married to men with higher education and higher income, live in better environment and surroundings which have positive influence on child health and survival (Frost, 2005; Desai and Alva, 1998; Cleland and Van, 1988). The study from 22 developing countries based on DHS data observed that when the socio-economic statuses are incorporated in the model as variables, the effectiveness of maternal education largely disappears and retains its significance only in a handful of countries. It is identified that socioeconomic status, health knowledge, reproductive behavior, modern attitude towards health care and female autonomy are factors that link the pathways between mother's education and child nutrition (Frost et al., 2005).

Amugsi et al. (2013) study also observed that mother with higher education are more empowered to be able to take decision on the type of nutrition and care the child should receive. The empirical findings also suggest that female autonomy as another pathway through which maternal education influences child nutrition (Tigga et al., 2015). With the increase in mother's control over family income, nutritional status of a child increases (Saraswathi, 1992). The more educated a women is, the more likely she is to be the decision maker with regards to child health. Further, the educated mother is also aware of the importance of hygiene practices on child health (Kandala et al., 2011). The hand washed before preparing and feeding food to the child, hand washed after latrine use are well practiced by educated women (Boerma et al., 1991). However, there are also some studies which found little or no association between education and health knowledge (Cleland and Ginneken, 1988). Besides, Burchi (2012) mentioned that father's education is important because a woman could use the literacy services of their husband and improve child nutrition. It is observed as complementary to mother's education to improve the nutritional status of the child in long run (Webb and Block, 2004).

Women's Autonomy and its Linkage with Child Nutrition: One ongoing focus of discussion has been the assertion that women's autonomy may be one of the important variables responsible for influencing the nutritional status of the child. But the term autonomy is expressed itself in numbers of ways such as having decision-making power, mobility, command, and control over resource (Arulampalam et al., 2016). It is defined "as the capacity to obtain information and make decision about one's private concerns and those of one's intimates" (Dyson and Moore, 1983). Safilios-Rothschild et al. (1982) also defines autonomy as "the ability to influence and control one's personal environment." According to Jejeebhoy (2000) autonomy is the "extent to which women exert control over their own lives within families in which they live at a given point of time." Similarly Haque et al. (2011) used the term autonomy to reflect the extent of power women possess by which they can do whatever they like to, without seeking permission or without having consent of other.

Many literatures have shown a positive association between women's autonomy and child health (Doan and Bisharat et al., 1990; Dreze and Murthi, 2001; Shroff et al., 2011). But the definition of autonomy used in each study varies from one another. It is a multi-dimensional construct (Arulampalam, 2016). Manson (1986) used control over household and societal resources to proxy autonomy, while Caldwell (1986) used education received and work outside home for the same purpose. Shroff et al. (2011) in his paper has conceptualised women autonomy as consisting of seven dimensions in which women make decision and control resources within the family. The seven dimensions of autonomy identified are household decision-making autonomy, child-related decision-making autonomy, financial control and access, decision regarding mobility, freedom of movement, acceptance of domestic violence, and experience of domestic violence. Roushdy (2004) as in Arulampalam et al. (2016) identified four indicators (i.e. mobility, women's control over cash, role in decision making related to children, and opinion towards domestic violence) and estimated the impact on the nutritional status of a child. It was observed that mobility was an important factor in determining nutritional status of a child. Shroff et al. (2011) argued that greater autonomy directly affects the women's health seeking behaviour which indirectly affects the nutritional status of a child. Further the linkage between women autonomy, breastfeeding and infant growth has also been explored in many literatures. Shroff (2011) revealed that mother with higher financial autonomy was more likely to

breastfed their infants. Similarly, mother with higher participation in household decision making has less underweight and wasted child. Arulampalam et al. (2016) in their study mentioned that greater autonomy enable women to override long-standing cultural perception and adopt fertility practices openly which are more conducive to better child nutrition.

1.3.2 Economic Factors

Numerous studies have consistently reported that the prevalence of child under-nutrition is influenced by several economic factors (Choudhury et al., 2000; Mahgoub et al., 2006; Som et al., 2006; Mondal and Sen, 2010; Tigga et al., 2015). It has also been observed that the economic status has an important and positive role in influencing the nutritional status of the child.

Income and its Linkage with Child Nutrition: Income of a household is one of the strong predictors of nutritional status of a child. The increase in the household income increases the nutritional status of entire family specially the young children. Compared to the children from low-income household, the children from high-income household are less likely to be undernourished (Mondal and Sen, 2010; Tigga et al., 2015). With the increase in the level of income, there is a tendency to spend more money on nutritional food, warm clothing, health care services and medicine which directly impact child health outcome (Barrett and Browne, 1996). Also, high income is highly correlated with better housing condition and lower contaminant levels. Some studies found that with an increase in the income, the consumption of cereals, millets, and green leafy vegetable decreases but there is a corresponding increase in the consumption of proteins, fats, and energy. It was also argued in some literature that women of low-income household are not capable of providing nutritious food for their children and balanced food for childhood growth. Svedberg (2008) in his study observed that low-income households can not feed children with micronutrient food such as, animal product, fruits, and vegetables which are invariably more expensive than staple food. Income constrain household not only for a balanced diet but also for adequate housing, sanitation, and water supply which indirectly influence the nutritional status of a child (Svedberg, 2008).

Mother's Work and its Linkage with Child Nutrition: It is widely recognised that the activity of the mother's work has a significant influence on the nutritional status of a child. Mother's economic participation may contribute to family income, which is expected to improve the nutritional status of a child. However, many literatures have discussed the possibility of both negative as well as positive effects of mother's work on the nutritional status of a child (Gibbons and Griffiths, 1984 as in Leslie, 1988). The allocation of her time in both income production and household related work has an important impact on nutritional status of a child (Popkin and Solon, 1976).

In the Indian context, it was observed that compared to nonworking women, the mortality risk for the child is higher if a woman was working. It was also observed that working woman not only have less time to care for her child but also less time for the duration of breastfeeding (Zachariah et al., 1994). More specifically, it is among the poorer sections of a population, the probability of children dying is greater for a mother who is employed as compared to one who is not (Basu and Basu, 1991). Ware (1984) on the other hand, observed that mother's work status influence child care adversely when the mother lacks access to another person to care for the child. The working women are more likely to have less time and energy for non-work activities including family obligations (Chee et al., 2009). The study by Desai and Jain (1994) indicated that in India, mother time with the child care is not very sensitive to women's involvement in market work. Infact, it is the women with no market work who were responsible for time-consuming domestic chores that left them little time for childcare. In this context, one needs to bring out the role of the family. If the alternative caregiver is available in the family, mother's work may not have a direct relationship with nutritional status of a child. In China, it is observed that child care is not exclusively the province of the mother. Alternative child caregivers play an important role when mothers are in highly demanding work (Short et al., 2002 as in Das and Subba, 2015). However, in the absence of alternative care, demand for external assistance rises. "Whether an alternative caregiver is required or not, at home or outside home, depends on mother's place of work as well as a number of children she has to provide care" (Hallman el al., 2005 as in Das and Subba, 2015). Alternatively, it can be said that working women with more number of young children need caregivers, irrespective of her place of work.

Further, the recent studies argue, that the changing patterns of women's work are a major cause of declining rate of breastfeeding which in turn is influencing the nutritional status of a child. Popkin and Solon (1976) argued that when the woman enters the market labour force the amount of time spent in child care and feeding practices are likely to decline. The declining rate of breastfeeding in low-income nations is a source of great concern (Popkin and Solon, 1976). Various literature has shown that breastfeeding has a significant influence on the nutritional status of a child. Improvement in feeding practices would undoubtedly help to alleviate serious problem of undernutrition in children. Further, the influence of breastfeeding on nutritional status of child has always been discussed in relation to the location of work (Short et al., 2002; Popkin and Solon, 1976). Location of work influence nutritional status of a child through duration of breastfeeding. The shortest duration of breastfeeding was found among women employed away from home than among women who worked at home or do not work (Leslei, 1988). On the other hand the findings from Honduras showed that "the mother who worked at home tended to view breastfeeding as a burden that took time needed for other tasks, while many mothers who worked away from home felt that time spent in breastfeeding was a time to relax and get away from work."

1.3.3 Other Determinants of Child Nutrition

Apart from several socio-demographic and economic factors, the nutritional status of a child also depends on many other factors. These could be the quality of health services, housing facilities, sanitation facilities, cultural norms and practices, and hygiene practices. WHO reported that large percent of health burden of malnutrition is attributed to poor water, sanitation, and hygiene. There is also evidence showing better sanitation and hygiene practices, prevent and reduce stunting. The study conducted by Esrey (1996) showed that improvement in sanitation results in increase in height. Some studies have also highlighted that issue in a country like India is not a lack of food, but rather a lack of toilets. The association between diarrhoea and malnutrition is well established. WHO estimated that half of malnutrition is associated with repeated diarrhoea from unsafe water, poor sanitation, and hygiene (World Health Organisation, 2011).

Several studies revealed that improved water and sanitation lowers the risk of child malnutrition (Daniels et al., 1991; Ricci and Becker, 1996). The child having access to hygienic sanitation is in better health condition than the child without such amenities (Kamal, 2011). A study conducted in rural India by Jalan and Ravillion (2001) show the positive relation between the health of a child below five years and piped water supply. However, this relation was not observed in poor families, particularly when the mother is poorly educated.Factors such as sanitation, hygiene, housing condition are clubbed under socio-economic status in some studies. The influence is evident in the fact that higher education is correlated with better health awareness and utilisation of health services. Further, higher income is also correlated with better housing condition and sanitation. Cultural norms and practices which have been identified as an important predictor of malnutrition lie within the conceptual framework of malnutrition according to the categorisation established in the UNICEF Food Care Health conceptual framework. It is documented that cultural beliefs and practices contributes to malnutrition (Mwangome et al., 2010). The study by Mengesha and Ayele (2015) indicated cross cultural differences in the technique, type and frequency of the feeding practices. In developing countries the mothers are not making better use of existing local food sources as complimentary feed not because of poverty, but cultural norms, traditional beliefs, and food practices (Ogunjuyigbe and Ojofetimi, 2006). In India, pregnant women avoid certain foods that are termed as hot and cold in the perception as these foods may be bad for mother and the baby. Further, the relation between treatment seeking behaviour and child nutritional status has also been mentioned in many studies. The study conducted by Bishaw (1990) indicated large percentage of population in developing countries lacks access to modern health care services and rely on traditional medicine or self-care. Many Asian countries witness poor access to health services and unfavourable child caring practices which contributed to child malnutrition.

1.3.4 Programmatic Factors and its Linkage with Child Nutrition

The effectiveness of the Integrated Child Development Services program in addressing the challenge of child undernutrition in India has been discussed in many literatures. Subbarao (1989) claims ICDS as an “over-researched” programme. The study by Vaid and Vaid (2005) in Resham Ghar colony of Jammu and Kashmir

revealed that all those who are enrolled in Anganwadi cenetrs were provided supplementary nutrition and had a good dietary intake as compared to the children who did not avail any services from ICDS. Renu and Rekha (1982) observed that as a result of ICDS centers the child nutritional status has improved. Compared to the area not covered by ICDS, the mean body weight and height, and nutrition were higher and better in the area covered by ICDS (Gupta et al., 1984). The longer the duration of Anganwadi cenetrs and ICDS project, a favourable effect on reduction of infant mortality rate is observed (Sharma and Gupta, 1993). A comparative study between the services provided by ICDS and other separate programme by Tandon (1989) indicated that ICDS program achieved better coverage of the targeted population and led to a significant decline in malnutrition among preschool children. The study of "before and after" programme intervention effect conducted by Patnial et al. (1999) in the rural block of Amarwada in Madhya Pradesh also indicated that participation in the supplementary nutrition program increased nutritional status by two to three fold in all categories of the targeted population. Utilisation of ICDS services indicated that supplementary nutrition, tetanus toxoid prophylxis, and iron and folic acid prophylaxis were the most frequently used services (Lal et al., 1995). Out of total women, 23.7 percent had never used ICDS services, and the major reasons were: could not spare time and working outside the household for long hours. Kapil (2002) also presented an excellent overview of the ICDS program. Kapil and Pradhan (2000) pointed out the important role played by ICDS workers in implementing the scheme at the ground level. The study indicated that ICDS has led to a reduction in the prevalence of severe malnutrition and better utilisation of services.

Another important factor that determines the effectiveness of ICDS services on the nutritional status of a child is the knowledge among ICDS workers on growth monitoring. The study conducted in Delhi by Bhasin et al. (1995) observed that 99 percent had adequate knowledge about the significance of the growth chart which indicates different grades of nutritional status but less than 50 percent knew about the correct assessment. As a result, there exists a misreporting of the health status of the child. The findings suggest that education on various aspects on growth monitoring is needed in ICDS workers. Another study conducted by Ray (2005) mentioned, growth monitoring as not satisfactory. Even the majority of workers reported that they record monthly weight and height of a child and only a few knew about plotting and its

significance. Further, the study conducted in seven States of India by the Foundation for Research (1996) in Health System on the ICDS found that supplementary nutrition was not reached to the children below two years, and there is high tendency of Anganwadi workers to over-report the number of beneficiaries as well as rate of provision of food and other services.

However, some studies have also highlighted the loopholes and drawback of ICDS. The study by Bredenkamp and Akin (2004), in the state of Kerela, Maharashtra, Rajasthan, and UP found very little evidence of better health condition in area covered by AWCs than the area not covered AWCs. Radhakrishana, 2005 reasoned that meagre allocation of budgetary resource responsible for low effectiveness of ICDS on the nutritional status of a child. "Though the ICDS programme appears to be well designed and well placed to address the multi-dimensional causes of malnutrition in India, there are several mismatches between the programme's design and its actual implementation that prevent it from reaching its potential" (Gragnolati et al., 2004). Various literature has revealed that the nutritional supplement in the ICDS is ineffective. A study conducted in Kinnaur district of Himachal Pradesh based on 55 Anganwadi centers shows that the food storage facility was very poor in the Centers. The quantity and regularity of distribution of supplements remains a major source of worry in Uttar Pradesh (Ramanchandran et al., 2003). The study conducted by the Khullar (1998) on Integrated Child Development Services in India, highlighted that Anganwadi workers are increasingly overburdened with duties and paperwork. So their focus on the growth of women and children has become weak. The scheme does have many loopholes. According to NIPCCD report (1992), more than one-fifth percent of Anganwadi centers did not receive any nutrition supplement for over 90 days in a period of one year in India. It was reported that the food items normally served as supplementary nutrition in Anganwadi centers were not accepted by the community. The reason reported was being difficult to digest, causing diarrhoea, not tasty and not fit for consumption. Another study revealed that people are not satisfied with the ICDS services. The problem arises either due to lack of proper involvement of workers in the programme or the infrastructure or supply of required food and medicine.

1.4 Literature on Child Nutrition in Tea Gardens

In this section, available literature related to the health of children in tea gardens is reviewed. The study on nutrition in the tea gardens of Darjeeling is an unexplored topic. Very few studies have been conducted on nutritional status of children of tea garden worker, but the worker's socio-economic and health condition has been discussed in most of the studies which indirectly throws light and help us to understand the nutritional status of the region.

Recently the topic 'malnutrition in the tea gardens of North Bengal' has gained the focus of discussion. It took lives of 1400 people between 2000-2015 in the 17 closed tea gardens of North Bengal (Chaudhuri, 2015). The most affected are families who are fully dependent on tea gardens for their livelihood. The shutting down of many tea gardens in North Bengal has created famine like condition making them vulnerable to malnutrition. Gangopadhyay (2016) mentioned that the owners of tea gardens are not paying any attention. The workers are dying of hunger and malnutrition since their wages are not paid. The majority of incidences are reported from Doors and Terai region of North Bengal. Low wages, lack of clean drinking water, ration and sanitation are the main causes of death in the tea garden area. The worst affected tea garden is Red Bank which has been closed since 2003 (Banerjee, 2014). The management in Red Bank disappeared, and the workers are not getting the facilities the management is supposed to provide. In working estate too, low wage rate, non availability of drinking water, sanitation and food items with low nutrient content has led to hunger deaths (Chaudhuri, 2015). The study conducted among plantation workers found that more than 50 percent tea garden workers have BMI below 18.5. Even children were severely affected, most of the tea gardens had no schools from where they could get mid-day meal.

Das and Islam (2006) have mentioned that people of tea gardens live a life of untold misery. The report by Centre for Education and Communication exposes the deplorable conditions under which the tea plantation workers of Assam and Bengal are living. The study on the Singtam tea estate of Darjeeling reported a shabby condition of dispensary and dilapidated condition of toilets provided by the management. Another case study of the tea estate in Darjeeling observed that none of

the benefits as per the provision Labour Plantation Act were provided except housing facilities.

Further, the issue of wages, housing, crèche facilities, health facilities discussed by Rasaily (2014) revealed that the women workers do not prefer to leave their children in the creche as the atmosphere was bad and do not supply milk, food, and water properly. The social security system of tea plantation workers in Darjeeling studied by Sarkar and Lama, (1986) argues that the social security system as operating in the tea garden has not integrated properly and adequately. All the nine types of benefits namely family allowance, medical, sickness, maternity, invalidity, old age, survivors' pension and employment injury benefits have glaring gaps in coverage. The study points out various loopholes in the social security system and comes up with the set of suggestion. Further, it has also been observed that the socio-economic condition of tea plantation workers is very different from a village community. The people of the plantations as non–revenue village does not enjoy many privileges enjoyed by traditional revenue villages. They have no ownership right to their land they occupy, they may not be able to engage in agriculture nor raise livestock to diversify their livelihood sources. The study conducted by Trikey (2005) mentioned that one of the main factors that diminishing people's socio-economic conditions in tea estates is the lack of ownership right to their land they occupy.

The Recent sociological study provides a gloomy picture on the health status of the plantation workers. Though studies on the health status of tea workers are extremely limited, Bhadra and Bhadra (1997) based on empirical finding gives an overview of the disease and the health service utilization patterns especially by the tea garden workers of West Bengal and Assam. The study highlighted the preference to traditional healer over institutional services in tea gardens. The study of the tribal plantation workers of the Terai region of West Bengal by Bhadra and Bhadra (1997) also highlighted the poor living conditions in the plantations i.e. rooms were not enough to accommodate a family of four members, sanitary latrines are non-existent and the workers defecate in the fields, effective drainage system was non-existent, wearing shoes was not so common among children. Also, domesticated animals were kept near the living room in a separate shed or in the *verandah* for fear of cattle lifting which according to them poses a threat of contagious diseases. Further, dilapidated

drainage system serves as breeding ground for mosquitoes and germs and to a host of diseases. Another study carried out by Krishnamurty's (1995) on the Health and Medical Care in Plantation Sector states that health and educational services are lacking in the tea growing districts of West Bengal and Assam. He stated that poor educational levels among workforce are increasing problems of drug abuse and alcoholism; unhygienic living and working conditions have lead to a high incidence of communicable diseases, parasitic infections, and malnutrition.

1.5 Research Gap

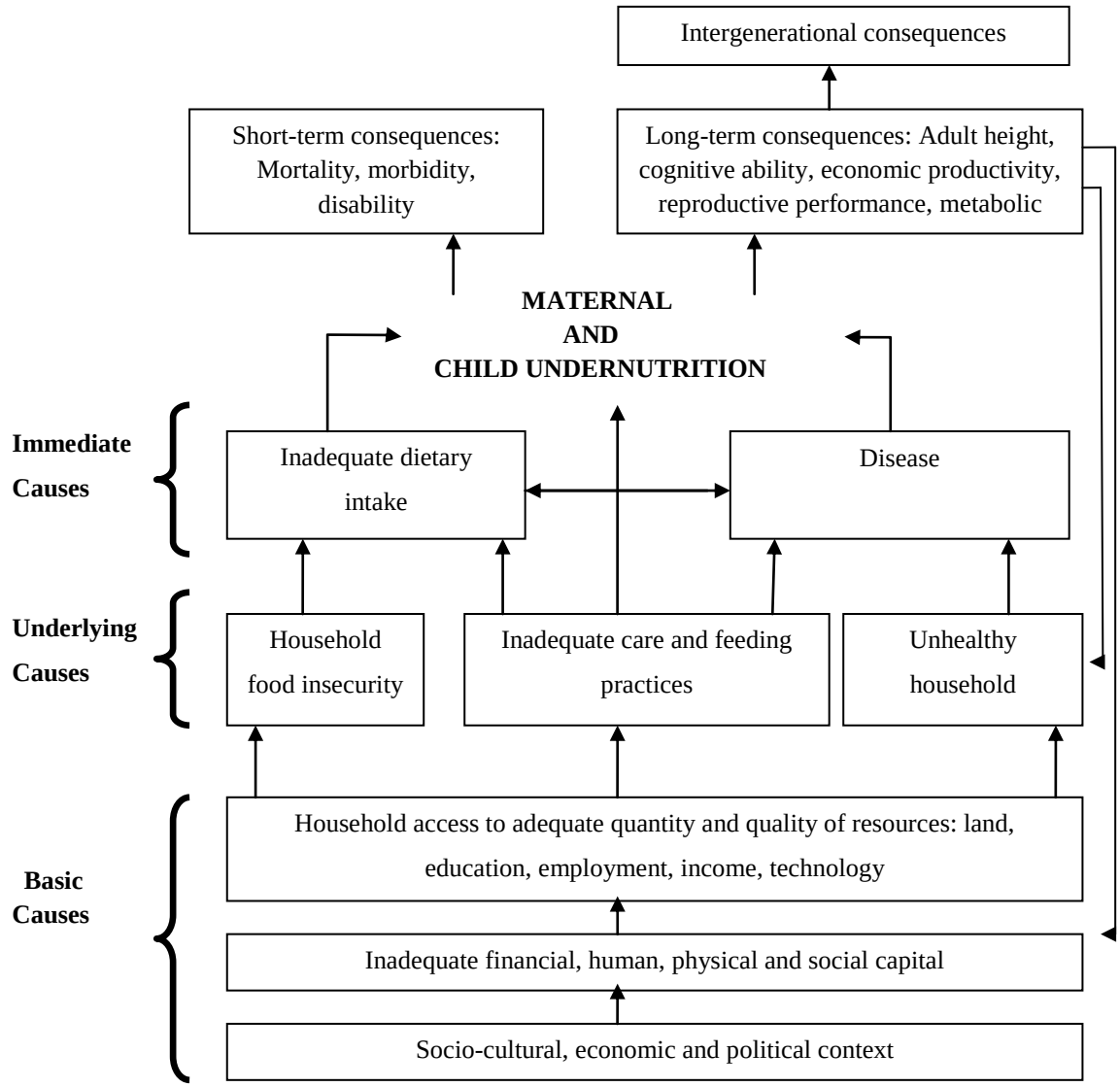
All the studies mentioned above provide useful insight on the nutritional status of the child. Many International, National and Regional studies on child nutrition have been conducted. Their determining factors, interlinking factors, programmatic factors are discussed in numerous studies. However, the common shortcomings of these are that there is a lack of micro-level study, especially in the tea garden areas. Most of the studies conducted are either done in the tea gardens of Assam or Doars/Terai regions of North Bengal. No study on the nutritional status of children of tea gardens of Darjeeling hills has been conducted so far. The available literature on tea gardens of Darjeeling provides a glimpse of their living condition which indirectly throws light on the possibility of having a poor health condition. The health condition of children in the tea gardens is an ignored area of research. The focus of most of the studies is to look at the living condition of tea gardens workers, their health condition, and utilisation of health care facility. Recently, studies related to women, their health status, their work condition and their association with child health have also gained attention by most of the scholars. Keeping these points under considerations, an attempt has been made to explore the nutritional status of children and their associated linkages in the tea gardens of Darjeeling.

1.6 Conceptual Framework

From the review of the literature, it is observed that nutritional status of children depends upon various socio-economic and demographic factors. In addition to these, living condition, mother’s autonomy, programmatic factors also influence the nutritional status of a child. UNICEF has developed the conceptual framework which captures the multifactorial causality of undernutrition. The three broad factors that

influence the nutritional status are food, health, and care (UNICEF). Fig 1.1 provides the conceptual framework developed by UNICEF.

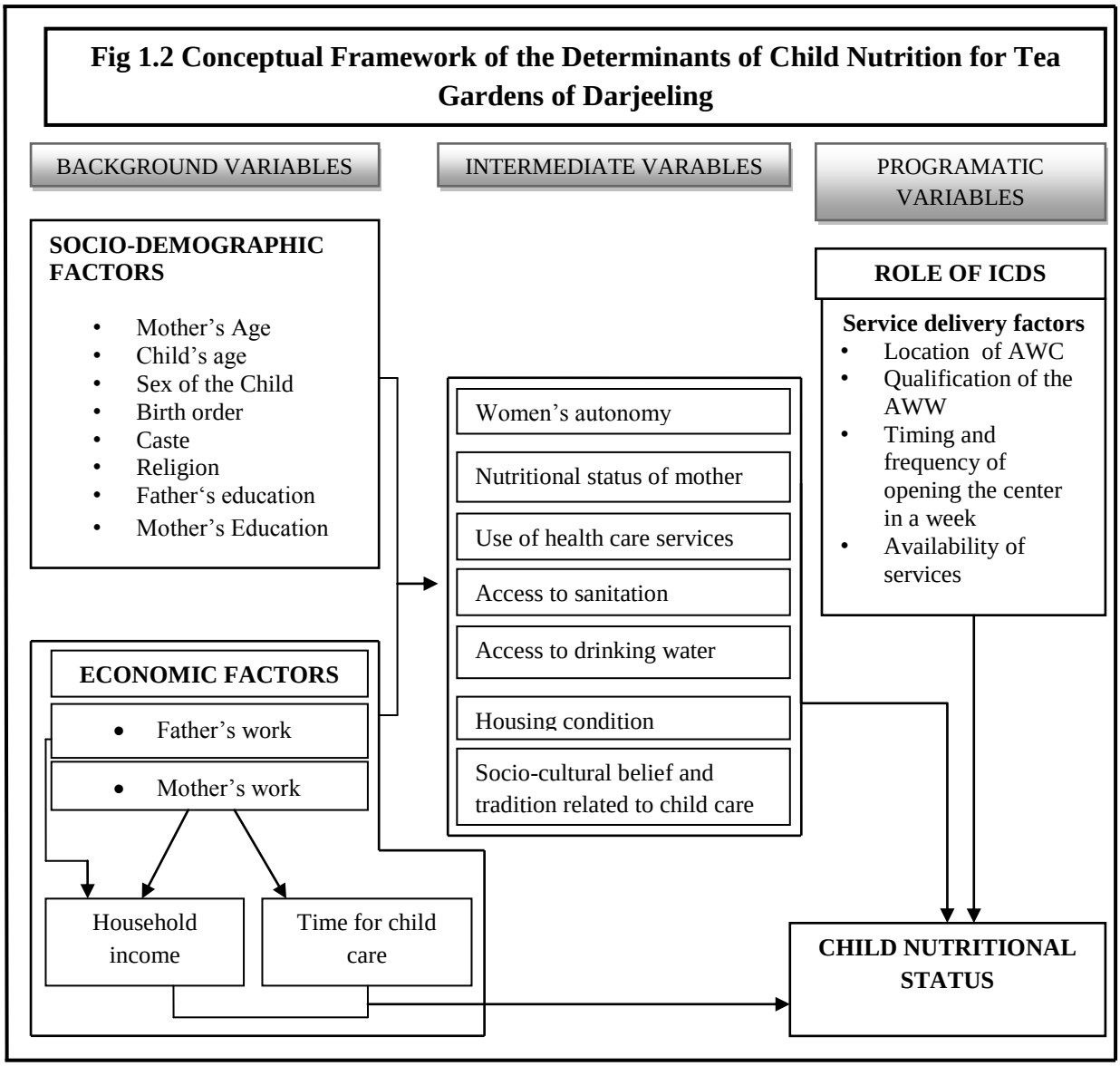
Fig 1.1 Conceptual Framework of the Determinants of Child Nutrition - Given by UNICEF



Source: Improving Child Nutrition, UNICEF, 2013

The combination and interaction of these variables differ from country to country and region to region. Thus, by taking UNICEF framework of determinants of child nutrition as a base, a modified conceptual framework on the child nutrition for tea garden children of Darjeeling has developed. The conceptual framework is presented in Fig 1.2. The framework shows that child's nutritional status is dependent upon the background variables, intermediate variables, and programmatic factor. Nutritional status of the child includes Stunted, Underweight and Wasted. The impact of these factors on nutritional status of children can be better understood through a flowchart given below.

Fig 1.2 Conceptual Framework of the Determinants of Child Nutrition for Tea Gardens of Darjeeling



The socio-demographic and economic factors include mother's age, child's age, sex of the child, birth order of the child, caste, religion, mother's educational level, husband's educational, mother work status, husband work status, and household income. These factors act as distance factors which influence the child nutritional status through intermediate variables. The intermediate variables include mother's autonomy, nutritional status of mother, access to sanitation, access to safe drinking water, housing condition, use of health care services and socio-cultural beliefs and traditions related to child care.

Further, the framework has also been proposed to show the influence of mother's work on the nutritional status of the child. There is an increasing interest in the relationship between mother's work and child's nutritional status. This relationship may be stronger in the tea-growing region of Darjeeling where a large proportion of women are working. The framework shows that the possibility of both positive and negative impact of mother's work on the nutritional status of a child. It has a positive impact because it may increase the household income; negative because women may have less time for child care and feeding.

Further, the programmatic factor i.e. the role of ICDS is also incorporated in the framework. The service delivery factors of ICDS determine the extent of access to the targeted population. The factors that determine the accessibility of addressing food and nutrition to the children are location of Anganwadi centers, qualification of the Anganwadi workers, timing, and frequency of opening the center and availability of services.

1.7 Chapterisation

The thesis consists of seven chapters. The first chapter includes the introductory chapter, literature review, and conceptual framework. The second chapter elaborate upon the study area, selection of the study area and objective. It also includes a description of the data source and analytical method used in the study. Chapter three presents the living condition and cultural practices in the tea gardens of Darjeeling. To make a comparison between public and private sector tea gardens by the availability of different amenities, well-being index has also been computed. Chapter four deals with the identification of different occupational combination among couples and their

influence on the nutritional status of a child. Chapter five focuses on the mother's work and their influence on the nutritional status of a child through different pathways. Time utilised by women on a daily basis has also been discussed in detail to capture time for child care. Chapter Six examines the availability and functioning of programmatic factors, especially ICDS. Chapter Seven, highlights major findings, limitation of the study, and discusses summary and conclusion of the research.

CHAPTER -2

CHAPTER-2

STATEMENT OF PROBLEM, OBJECTIVES, AND METHODOLOGY

2.1 Statement of Problem

The issue that has been taken up for the study is the nutritional status of children of the workers in tea gardens.

WHO stated that- "Children represent the future, and ensuring their healthy growth and development ought to be a prime concern of all societies."

It is well established that nutritional status is a major determinant of health and well-being of children and there is no doubt regarding the importance of the study of child nutritional status. The most at risk for being undernourished continue to be children from poor families, belonging to scheduled tribe/caste, having illiterate mothers and living in rural areas.

The area selected for the study is the tea gardens of Darjeeling district which falls under West Bengal. The table below (Table 2.1) shows the position of West Bengal in India in terms of the nutritional status of children. It clearly indicates that the nutritional status of children in West Bengal is better than the national average. The NFHS IV (20015-16) data indicates that overall nutritional status of children of Darjeeling in much better than the state average but the scenario in the tea gardens of Darjeeling may not be the same.

The available literatures, as well as some secondary data, indirectly indicate that the condition of health could be poor for the children in the tea gardens of Darjeeling.

Table 2.1 Nutritional Status of Children

Nutritional Status	India	West Bengal	Darjeeling
Stunted	38.7	34.0	30.0
Wasted	15.1	21.6	10.0
Underweight	29.4	33.6	25.3

Source: NFHS IV 2015-16

The selected study area Darjeeling is famous and popular throughout the world for producing high quality of tea, with a reputation based on its aroma, brightness, and taste. It is the people of tea gardens who are playing a major role in contributing to the economy of the states, but it is unfortunate that the life of these people living in the tea gardens has not yet been investigated much. It is believed that the people in tea gardens have been leading a life of untold misery. Tea garden workers in general and children and women, in particular, have long been a deprived, exploited and alienated group. Oppressive wage structure and complete indifference on the part of the management has forced the tea garden dwellers to find an alternative source of livelihood.

The reliable information on health and nutritional status among tea garden population are lacking behind. The available literature reveals a gloomy picture of nutritional and morbidity profile among the community. In reality, we have little knowledge about socio-economic and health condition of the people living in tea garden of Darjeeling. The availability of secondary data i.e. Census and some literature indicates that the people of tea garden are socio-economically lagging behind. Their poor socio-economic conditions, overcrowded and unhygienic living condition make the people of tea garden vulnerable to various communicable diseases and malnutrition. The worst affected are the children of the tea garden workers because the mother who is the real caregiver to child's health is mostly engaged in the tea industry. Their work status plays a crucial role in contributing nutritional status of a child, and their linkage may be stronger in tea garden estate where large numbers of women are employed. Dual role of women holds true in the case of women of tea garden. On the one hand, they play a significant role in income production, and on the other, they have the household related work. Thus the allocation of her time in both income production and household related work may have an important impact on nutritional status of the child.

Further, their well-being is highly dependent on the ownership and management arrangements of the tea gardens in which they live and work. Considering all these aspects, there is a need to study the nutritional status of a child in tea gardens of Darjeeling.

2.2 Objectives

The broad objective of the study is to investigate and understand the nutritional status of children of workers in tea gardens of Darjeeling. The specific objectives of the study are:

1. To understand the socio-economic and living condition of tea garden workers by ownership pattern of the tea estates/gardens.
2. To explore the variation in the source of livelihood among tea garden workers and their influence on the nutritional status of a child.
3. To identify the linkage between mother's work and child nutrition in the tea gardens of Darjeeling.
4. To examine and analyse the programmatic factors in improving the nutritional status of the child in the study area and to propose a practical suggestion for improving their effectiveness.

2.3 Research Questions

- Does the nutritional level of a child vary with the type of ownership pattern of tea garden?
- If either of the parents is employed in the activities out of tea garden, how it is influencing the nutritional status of a child and how it differs from the parents who are working in the tea garden.
- How women's role as both producers and reproducers has influenced the nutritional status of a child.
- Is the time by mother for child care important factor or there are other factors that have an important bearing on the nutritional status of a child.
- Does the implementation of programmatic factors particularly ICDS by the government in providing better child health status has any role in improving the nutritional status of a child in the tea gardens of Darjeeling?

2.4 Study Area: Darjeeling- "*THE LAND OF THUNDERBOLT."*

The name Darjeeling is a composition of 'dorje' meaning 'thunderbolt' and 'ling' meaning 'place'- 'the Land of Thunderbolt.' It is the northernmost district of the state of West Bengal in the foothills of the Himalayas. The strategic location of Darjeeling

is very important, bordering Bhutan to the east, Nepal to the west and Sikkim to the north thus forming an international and inter-state border area. When the British first arrived here, the place had been a sizeable village. Rapid developmental work by the British resulted in the construction of a road, houses, and a sanatorium. It was the British who first realised that the place could be turned into a health resort or a sanatorium. But it did not happen overnight. A long history is associated with Darjeeling and its development.

2.4.1 Brief History of Darjeeling

Until the beginning of 18th century, the whole of Darjeeling district was part of Sikkim and under the administration of King of Sikkim. However, the Kalimpong subdivision, a separate district of West Bengal declared in 2017 formed by bifurcating Darjeeling was taken over by the Bhutanese in 1706. The Sikkim at the same time was also continuously invaded by the Gorkhas from Nepal and captured Sikkim (i.e. the belt lying along the lower hills between river Tista and the Mechi, which is now covered with valuable tea gardens) by the end of this period. In the process of capturing land after land, they stepped into the toes of the British East India Company, ultimately leading to the defeat of the Gorkhas and ceding of all the land they had captured from the Sikkimese to the British. The company returned the whole of Sikkim back to the king of Sikkim and the country's sovereignty guaranteed by the British in return for British control over any disputes which arose with neighboring states.

Again in 1827, a dispute arose between Sikkim and Nepal, and as a result of the agreement, the two British officers were sent to this area. It was during this tour, the officers were quick to appreciate Darjeeling's value as a site for sanatorium and hill station. Dr.Campbell, a British resident of Nepal was appointed as superintendent of Darjeeling in 1839 and was made the in-charge of administration and for handling the political relation with Sikkim. He is known to be the person responsible for the initial development in Darjeeling. Meanwhile, relationship with Sikkim started deteriorating. The rapid development of Darjeeling as a trading center and tea growing area along the trade route leading from Sikkim to the plains of India began to make a considerable impact on the fortunes of the leading merchants of Sikkim. Their relationship soured, and ultimately the British annexed the entire land between the

present borders of Sikkim and the Bengal plains. Further, it also withdrew the annual stipend which was paid to Raja according to the agreement made between them. Thus, the conflicts and eventually annexations by the British brought about a significant change in Darjeeling's status. Previously, the annexed area was the conclave within the Sikkimese territory and to reach it British had to cross the area ruled by the independent king. But after the takeover, Darjeeling became contiguous with British territory, and Sikkim was cut off from the access to the plains. The new area annexed measured some 640 square miles. During that time Kalimpong was still under the captivity of Bhutanese. However, after the defeat of Bhutan in the Anglo-Bhutan War, a treaty was signed in 1865 between the British and the Bhutanese which allowed possession of Kalimpong by the British in return for an annual subsidy. In 1866, Kalimpong too was transferred to the district of Darjeeling giving the district its final shape till Kalimpong was declared a separate district of West Bengal in 2017.

2.4.2 Story of Darjeeling Tea

The association between Darjeeling and Tea is well derived. The moment you say Darjeeling, the response you get from your listener is "Tea." It occupies a place of pride for the whole of India. It produces the world's most aromatic variety of tea. The combination of altitude, sunshine, rainfall, and soil help Darjeeling produce the most fragrant of teas.

The history of Darjeeling tea begins with the kingdom of Sikkim, which controlled the Darjeeling area until 1894. In 1814 when a dispute arose between Sikkim and its neighboring state Nepal, the British East India Company intervened. As a result, Sikkim became a buffer state between Nepal and Bhutan. Afterward, the British maintained a presence in the area and found that the area of Darjeeling was suitable for a health resort. In 1835 they negotiated with the king of Sikkim to lease the area with plans to establish a sanitarium for British troops.

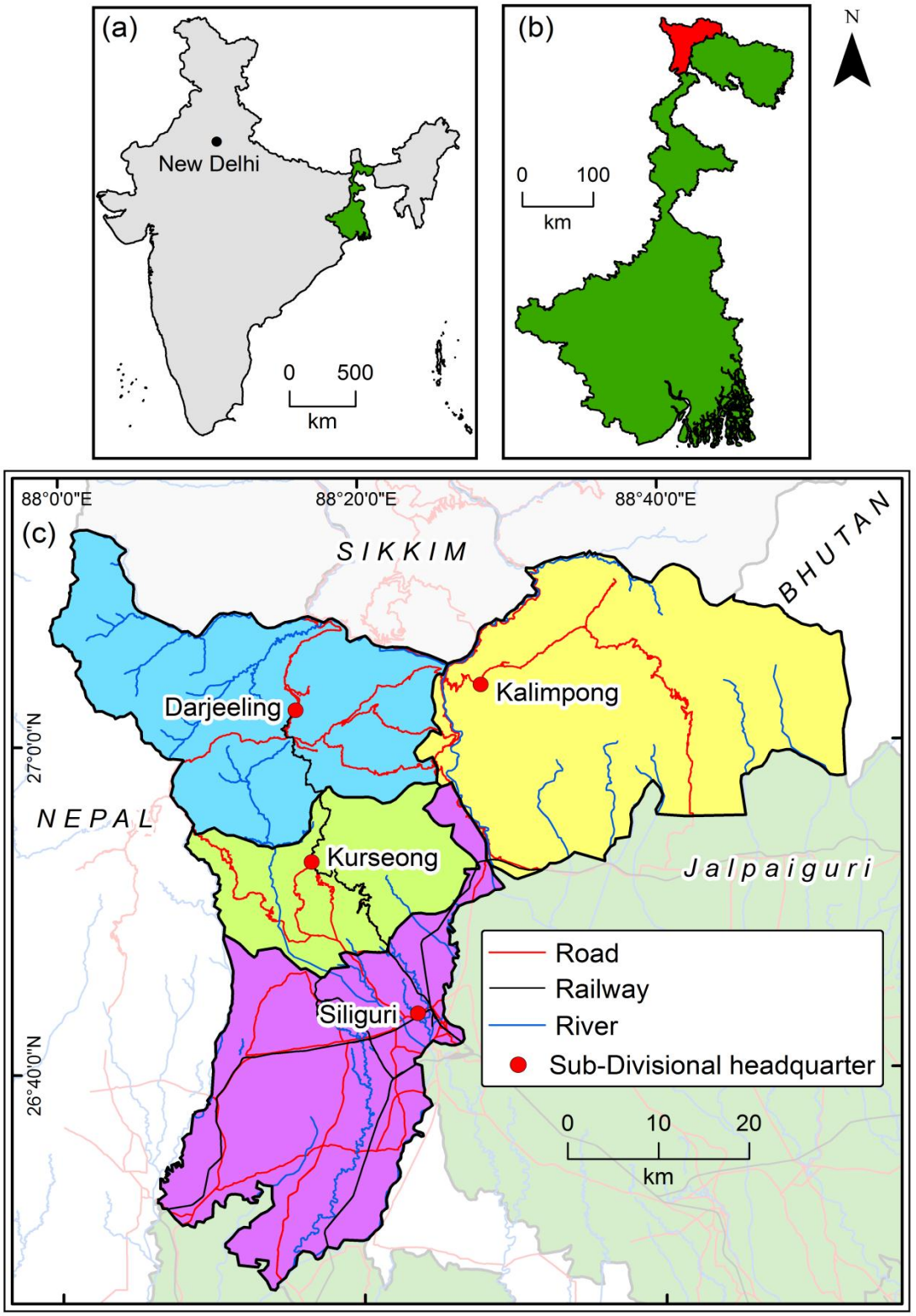
The first superintendent of Darjeeling Dr. Archibald Campbell, who was transferred to the area in 1839, planted some tea seeds in his garden at Beechwood, Darjeeling, 7000 ft above sea level as an experimental. He was successful in raising the plant because the government, in 1847, approved to put out tea nurseries in this area. According to the records, the first commercial tea gardens planted out by the British

were Tukvar, Steinthal, Aloobari and Lebong tea estates. Darjeeling tea grew as a commercially viable option. However they had two problems, one was the knowledge of cultivating tea in Darjeeling hills, and the other was a large number of labourers required in the gardens. For the first, they relied on whatever information they could get hold of from other sources. Some got it right and went forwarded; some got it wrong and went broke. But the real problem was to get labourers. Tea being a labour intensive crop required sufficient numbers of workers to plant, tend, pluck and manufacture the produce. The Lepchas, Bhutias, Limboo who was then the inhabitant of Darjeeling refused to work. They were happy with their simple way of living. As a result, more immigrants were consequently attracted to the district. When a rough census was taken in 1869, the inhabitant in this area was around 22,000 persons, but when the first regular census was carried out in 1871-72, the total population reached to 94,712 and 155,179 persons in 1881 census. The labourer were given water, free medical treatment, medicines, place to stay and a liberty to leave any time. Wages were also given at the end of the every month and sometimes in weekend which was something unheard and unusual during those days. The relation between the employers and employees continue to improve. Year after year new gardens have opened up, and the quality of tea kept improving due to improved technology, and innovation and growing competition between the gardens. In 1866, Darjeeling had 39 gardens which were increases to 56 in 1870. In 1874, the number of tea gardens reached 113 and in 1905 it reached to 148 tea gardens covering approximately 50,618 acres of land under tea cultivation (O'Malley, 1907).

Right from the beginning, the tea gardens never belonged to any resident of Darjeeling, but after India's independence in 1947, Tea estate's ownership changed hands from British to the Indian government. By the 1960s a lot of replanting was done, and presently there is total of 87 estates in the hills which have been accorded the status for its produces as Darjeeling Tea by the Tea Board of India[1].

[1] "The Tea Board of India is a statutory body of the Central Government under the Ministry of Commerce. It is established to promote the cultivation, processing, and domestic trade as well as export of tea from India. It was established by the enactment of the Tea Act in 1953 with its headquarters in Kolkata" (Tea Board of India, 2017).

Map No. 2.1 Study Area- Darjeeling



2.4.3 Darjeeling Tea- Defined by Tea Board of India

The Tea Board of India defines Darjeeling tea as follows: "Tea which has been cultivated, grown, produced, manufactured and processed in the defined geographical areas. Such as

- *In the hilly areas of Sadar Subdivision,*
- *Only in the hilly areas of Kalimpong Subdivision comprising Samabeong Tea Estate, Ambiok Tea Estate, Mission Hill Tea Estate, and Kumai Tea Estate and Kurseong Subdivision excluding the areas in jurisdiction list 20, 21, 23, 24, 29, 31, and 33 comprising Siliguri Subdivision of New Chumta Tea Estate, Simulbari and Marionbari Tea Estate of Kurseong Police Station,*
- *In Kurseong Subdivision of Darjeeling District."*

2.4.4 Some Facts of Study Area- Darjeeling

The district is divided into four subdivisions i.e. Darjeeling, Kalimpong, Kurseong, and Siliguri but the three division of the district, namely Darjeeling, Kalimpong, and Kurseong constitute the hilly areas, and the Siliguri subdivision is in the plains. In the north, the region is border by Sikkim, in the West by Nepal, and in the South and East by Bengal plains. The people of Darjeeling who grow up in the mountains identify themselves according to their ancestry: Lepcha, limbo, Bhutanese, Nepalese. With the arrival of British in this place, rapid development took place which increased the population here. By 1901, total population in Darjeeling reached to 249,117 persons.

According to the most recent census 2011 (Table 2.2), the population of the district is 184.6 million. The population density is 586 per square kilometer. The literacy rate in the district is 85 percent for men and 73 percent for women. The economy of this region is dependent on three T's; Tea, Tourism, and Timber. With great concern for the environment, trade in timber has fallen sharply over the years. Apart from these, considerable amount of oranges, cardamom, flower are also produced in this region. However, the main economic activities in the region, generating the most employment and revenue, are tea manufacturing and tourism sector. Tea is thus more important than tourism. It is the main crop and is grown over a vast area of hilly land, covering 17,542 hectares divided into 87 estates. The people living in the tea gardens depend solely on tea industry for their livelihood. Large number of workers both male and

female directly or indirectly obtains their livelihood from plantation work. There is a distinct difference in the male and female workforce participation in Darjeeling district and the tea gardens of Darjeeling. The gap between male and female work force participation is 11 percent in tea gardens of Darjeeling as compared to district figure i.e. 29 percent.

Table 2.2 Basic Indicators for Darjeeling District

Indicators	Darjeeling District	Darjeeling Tea Garden
Population	1846823	215220
Sex ratio	970	1011
Female Literary rate	73.4	71.4
Male literacy rate	85.6	88.4
Male WPR	51.2	43.1
Female WPR	22.4	32.4

Source: Primary Census Abstract: Registrar General, India 2011

Darjeeling tea industry is going through a very hard time. Due to financial and administrative problems, the past few years have seen the decline of the tea industry resulted in a shutdown of few tea gardens. Sudden shut down of tea gardens though temporary, have affected the families who were fully dependent on tea garden for their livelihood. Even those tea estates which are functioning paid very minimum wages. This deplorable situation seriously affected the health of workers and their families.

2.5 Methodology

2.5.1 Data Source

The study is based on both primary and secondary data, but more emphasis and the major findings are based on primary source data. To supplement the analysis, secondary data is taken from Census of India (2011) and NFHS IV (2015-16). The data from the census is used to understand the socio-economic background of the selected region. It has also been used for the purpose of selection of sample blocks

and villages. NFHS IV[2] is used to study the nutritional status of children at the state and district level. The primary data collected from field helps to understand the nutritional level of the children at ground level and associated factors there off. For collecting primary data, a field survey has been conducted based on following themes:

1. Household survey
    - Mother's characteristics
    - Father's characteristics
    - Child's characteristics
2. Anthropometric Survey of a Child
3. Survey on lifestyle, and health beliefs related to childcare
4. Time used survey of the Mothers
5. In-depth interview of Anganwadi workers
6. Check list of tea gardens

2.5.2 Sample Design for Household Survey

For the need of the present study, out of total 87 tea gardens in the hills, 10 tea gardens on the basis of population size are selected. In order to remove biasness in selecting sample tea gardens, tea gardens with diverse patterns of ownership, i.e. private and public limited companies has been taken care of.

Further, following population size criteria has been taken into consideration while selecting the sample tea gardens.

i. Tea gardens having household more than 350
ii. Tea gardens having children more than 150

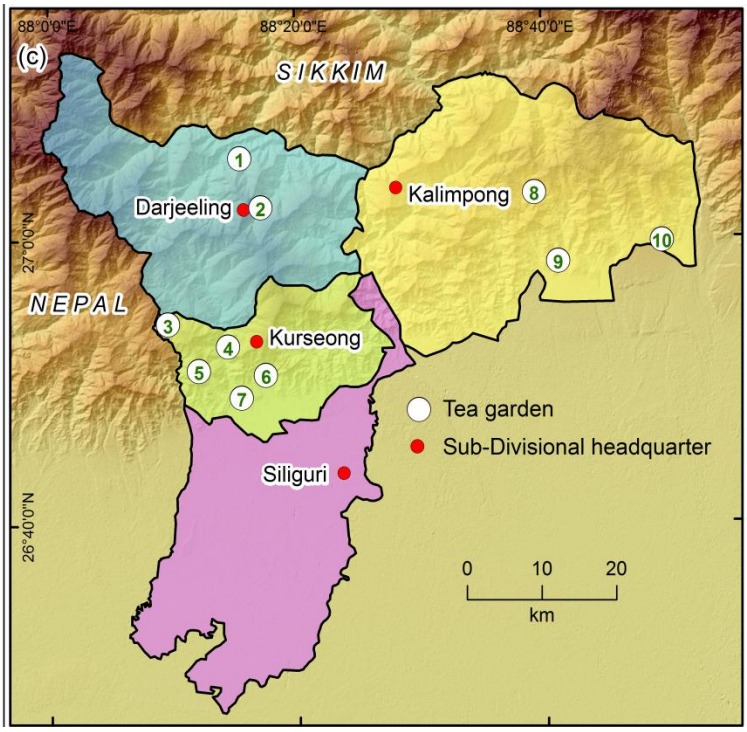
After selection of the sample tea gardens, 400 households with children between1-5 year are selected under study. These 400 samples are picked from 10 tea gardens based on Probability Proportion to size Sampling (PPS) technique (Table 2.3). The children below 1 year are excluded from the study because their nutritional status highly depends on breastfeeding practice and the nutritional status of their mother.

[2] NFHS IV is the National Family Health Survey conducted in 2015-16 by International Institute of Population studies.

Table 2.3 Total Household and 0-6 Population in Tea Gardens of Darjeeling			
Selected Tea Gardens	Total Household	Population 0-6 years	Selected Samples
Samabiyong Tea Garden	350	156	19
Paschim Phuguri Tea Garden	627	267	32
Okaity Tea Garden	734	277	33
Pandam Tea Garden	932	292	35
Rohini Tea Garden	588	298	35
Upper Fagu Tea Garden	780	362	43
Ambootia Tea Garden	1124	370	44
Tukvar Tea Garden	1043	397	47
Kumai-snow view Tea Garden	814	415	49
Longview Tea Garden	1190	536	64
Total	**8182**	**3370**	**400 (samples)**

Primary Census Abstract: Registrar General, India 2011.

Map No. 2.2 Location Map of the Selected Sample Tea Gardens of Darjeeling



Circles with number within the map shows locations of sample tea gardens

1. Tukvar
2. Pandam
3. Okaity
4. Ambootia
5. Phuguri
6. Rohini
7. Longview
8. Samabiyong
9. Upper Fagu
10. Kumai tea garden

While selecting the sample children from the household, following critteria has been considered:

i. One child from one household and the youngest child is surveyed.

ii. Parents of the child having a mixed occupation. At least one should be employed in the tea plantation.

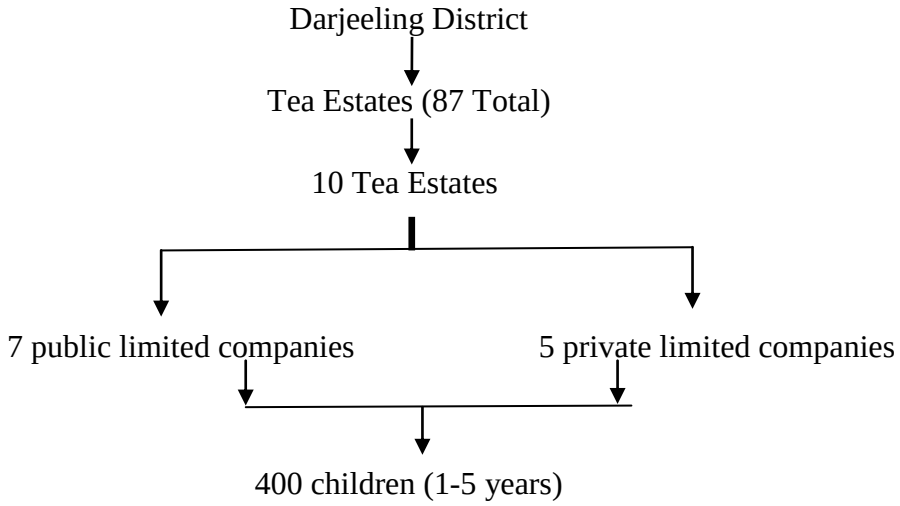


Plate 2.1 Picture Taken while Conducting Interview with Women in Tea Gardens of Darjeeling

2.5.3 Measures used to Evaluate Child Nutrition

For the evaluation of nutritional status of children in the tea gardens of Darjeeling, three most commonly used internationally recognised indicators i.e. stunting, wasted, and underweight is used. The height for age index is a measure of linear growth and is an indicator of chronic undernutrition i.e. stunted. The weight for height index measures body mass in relation to body length which shows a sign of wasted resulted mainly from inadequate nutrition during the period immediately before the survey. Weight for age is a composite index which combines both chronic and acute undernutrition and shows the underweight condition, which may depend on multiple causes. Each of these indices show a nutritional history of a child and is compared against an international reference population developed from anthropometric data collected in the United States by the National Centre for Health Statistics (NCHS) as recommended by World Health Organisation. Children whose measurement fall below -2 standard deviations of the reference population median are considered undernourished i.e. stunted, wasted and underweight. Further, Composite Index of Anthropocentric Failure (CIAF) developed by economist Peter Svedberg which incorporates all undernourished children (wasted, stunted, and underweight) has been calculated and used for the final analysis. All three indices i.e. stunting, wasted and underweight which helps to identify the level of undernutrition in the study area has been derived with the help of **WHO AnthroPlus**[3] software based on the WHO standards (default setting) or NCHS reference, using the z-score and percentile classification system.

[3] "WHO AnthroPlus is a software for use on desktop personal computers or laptops using MS Windows. It was developed to facilitate the application of the WHO Reference 2007 for 5-19 years to monitor the growth of school-age children and adolescents. To show the continuity with the WHO Child Growth Standards for 0-5 years these are included in AnthroPlus for the three indicators that apply, i.e. weight-for-age, height-for-age and BMI-for-age. This software enables monitoring growth in individuals and populations of children from birth to 19 years of age. WHO Anthro, in turn, is a software which was published in 2006 together with the first set of the WHO Child Growth Standards (i.e. weight-for-age, height-for-age, weight-for-height, BMI-for-age and windows of achievement for six gross motor milestones). In 2008 WHO Anthro was updated to include the second set of attained growth indicators: Head-circumference-for-age, arm-circumference-for-age, triceps and sub-scapular skinfold-for-age, and to allow users to choose a French or Spanish language version" (Blossner et al, 2010).

The reference standards most commonly used to standardize measurements were developed by the US National Center for Health Statistics (NCHS) and are recommended for international use by the World Health Organization. The reference population chosen by NCHS was a statistically valid random population of healthy infants and children from diverse ethnic backgrounds and cultural settings (Cogill, 2003). Questions have frequently been raised about the validity of the US-based NCHS reference standards for populations from other ethnic backgrounds. However it is generally observed that "until the age of approximately 10 years, children from well-nourished and healthy families throughout the world grow at approximately the same rate and attain the same height and weight as children from industrialized countries" (Cogill, 2003). Consideration these points the international reference standards have been referred while computing anthropometric failure for the children of tea gardens of Darjeeling.

2.5.4 Statistical Methods

In this study, various statistical techniques have been used for analysing the nutritional status of the child. The technique used to analyse the data are:

Pearson's Chi-square Significant Test: The chi-square test is an inferential test that uses data from a sample to make a conclusion about the relationship between categorical variables in the population. In the present study, this test has been conducted to see whether any relation exit between child nutrition and the selected independent variables. The data used in calculating a chi-square statistic must be random, raw, mutually exclusive, drawn from independent variables and be drawn from large enough sample. It is used to determine whether there is a significant difference between the expected frequency and the observed frequencies in one or more categories. Does the number of individuals or objects that fall in each category differ significantly from the number you would expect? It is commonly used to test the hypothesis that the data are dependent or independent.

Pearson's Correlation: Correlation analysis, is a technique for investigating the relationship between two quantitative, continuous variables (e.g., between an independent variable and a dependent variable or between two independent variables). This method is the current study area is used to see the whether any relationship exit

between time used by mother in different activities i.e. household work, child care, leisure, and economic activity. Pearson's correlation coefficient is estimated in correlation analysis which ranges between -1 and +1. The coefficient helps to identify the direction and strength of the association between the selected variables. The correlation between two variables can be positive or negative. The sign of coefficient indicates the direction of the association. The magnitude of the correlation coefficient indicates the strength of the association.

Point-Biserial Correlation: A point-biserial correlation is used to measure the strength of association between a continuous variable and a binary variable. It is a special case of Pearson's correlation where one of the variables is measures on a dichotomous scale. Like Pearson's correlation coefficient, Point-biserial coefficient also measures the association between two variables in a single measure ranking from -1 to +1. Negative 1 indicates a perfect Negative association, Positive 1 indicates perfect positive association, and 0 indicates no association between variables. To see the association and direction between time for different activities and mother's characteristics this method has been used in the study area.

Principal Component Analysis (PCA): Principal component analysis is the most popular multivariate statistical technique. It aims at reducing a large set of variables to a smaller set of artificial variables called 'principal components,' which account for most of the variance in the original variables. In the present study, this technique has been used to see the level of well-being in tea garden of Darjeeling by ownership pattern.

Binary Logistic Regression Analysis: Logistic regression is a statistical method for analyzing a dataset in which there are one or more independent variables that determine an outcome. The outcome is measured with a dichotomous variable. The goal of logistic regression is to find the best fitting model to describe the relationship between the dichotomous characteristic of interest and a set of independent variables. In logistic regression, for each variable, the log odds are given. The log odds indicate the change in the response variable with respect to the predictor variable while other predictor variables are constant. In the present study, logistic regression has been used to estimate the net effect of each predictor variable on the nutritional status of a child.

2.5.5 Explanation of Variables

The variables selected in the present study can be classified into two groups, Response variables (dependent variables) and Predictor variables (independent). A list of all the variables is as follows.

***Response/dependent variables*:** The response or dependent variables are the nutritional indicators such as Stunted, Wasted, Underweight and CIAF which are taken dichotomous or in Yes/No form.

Stunted: A child with more than two standard deviations below the median of the international reference population in terms of their height for age is defined as stunted.

Stunted is measured as:

0- Child is not stunted
1- Child is stunted

Wasted: A child with more than two standard deviations below the median of the international reference population in terms of their weight for height is defined as wasted.

Wasted is measured as:

0- Child is not wasted
1- Child is wasted

Underweight: A child with more than two standard deviations below the median of the international reference population in terms of their weight for age is defined as underweight.

Underweight is measured as:

0- Child is not underweight
1- Child is underweight

CIAF- Composite Index of Anthropometric indicator has been computed by incorporating all undernourished children (wasted/ or stunted/ or underweight).

0- Child without any failure (Not undernourished)

1- Child with any failure (Undernourished)

Predictor/Independent variables: The predictor variables used in the study has been discussed below in following sub-groups:

Demographic predictors

Child's age: The age of the child has been categorised into four groups i.e. 1-2, 2-3, 3-4, 4-5 because the risk of under-nutrition varies with the age of the child. 'Child's age between 1-2' is kept as the reference category.

Child's sex: As sex bias in child feeding and child rearing is common in India, it is taken as a determinant of health and nutritional status of the child. The categories are Male and Female. 'Male Child' is kept as the reference category.

Mother's current age: Mother's current age is also included in the study and categorised into following four groups: below 20, 20-25, 25-30 and more than 30. Here 'women age below 20' is taken as the reference category.

Religion: Religion is presented in four categories: i.e. Hindu, Buddhist, Christian, and others. 'Hindu' is chosen to be the reference category.

Caste: Caste is categorised into four groups i.e. Other backward class (OBC), Schedule Tribe (ST), Schedule Caste (SC) and Other caste (Non SC/ST/OBC). The category of 'Others' is taken as a reference category.

Socio-economic predictors: Besides demographic factors socio-economic factors also have a major role in determining the nutritional status of the child.

Mother's education: Education is one of the fundamental factors of development. Women's educational level is generally used as an important indicator to measure the level of development of society. Educated women are more aware of the issues on preventative and curative health care. They are aware of personal hygiene and better

food habits for the improvement of child nutritional and health status than uneducated or less educated persons. The mother's educational level is categorised according to their educational level. However, for the analysis of primary data, illiterate and primary level has been clubbed together assuming that it is only after the attainment of certain level of educational i.e. above primary level, the change in the behavioural pattern of the population can be observed. The categories are: below primary level, middle level, and secondary and above. 'A woman below primary level education' is kept as the reference category.

Father's education: Father's educational level has also been considered to be an important indicator. It has been categorised as below primary level, middle level, and secondary and above. 'Below primary level education' is taken as the reference category.

Mother's work status: More than half of the women of tea gardens are employed in tea garden and has been categorised as working and non-working. Those who are working, the type of work has also been categorised into permanent workers, temporary workers, and others. The work has also been segregated into cash or kind because the women who are employed permanently receive payment both in cash and in kind whereas those who are working temporarily receive only in cash, and others includes those women who are working but not employed as tea garden workers. 'Non working women' is kept as the reference category.

Father's work status: Similar to the women's work status, husband's work status has also been categorised into two type working and non working. In additional to this, the work status has also been categorised on the basis of the couple's work combination. The combinations are: both husband and wife working in tea garden, only one from couple working in tea garden, one working in tea garden and other working in lower jobs, one working in tea garden and other working in better jobs.

Household's Income: The income of the household is the strong predictor of the child nutrition. For the current purpose of the study the household income has been categorized into 4 sub groups: very low, low, medium, and high. 'Very low income' group has been taken as a reference category.

Intermediate variables

Exposure to mass media: Information on exposure to mass media such as reading newspaper, listening to radio and watching television were collected among women on daily basis. For the purpose of the study, exposure to mass media has been categorised into two groups: Not exposed to any kind of mass media and exposed to at least one type of mass media. 'Not exposed to mass media' is chooses to be reference category.

Standard of living: The standard of living index has been calculated adding the scores given to the availability of facilities in the household based on the primary survey data. The scores are added to come up with a total score. On this basis, three categories of SLI were created: Low, medium, and high, keeping 'low standard of living' as reference category. These scores are similar to the scores given by the NFHS 3 (2005-06) to calculate the SLI (Table 2.4). The scores are as follows:

Table 2.4 Indicators used to Calculate Standard of Living Index

Indicators	Categories	Scores
Type of House	Pucca	4
	Semi-pucca	2
	Kachha	0
Fuel used for cooking	LPG	2
	Both LPG and wood	1
	Cow dung, Wood	0
Separate room for cooking	Separate room	2
	No separate room	1
	Open space	0
Source of drinking water	Pipe	1
	Carry	0
Type of toilet	Own toilet	2
	Open space	0
Television availability	Yes	2
	No	0

Women autonomy: Women autonomy has also been computed by adding three variables (i.e. decision making, mobility, and finance autonomy) into one, which later has been categorised into three groups (Table 2.6): No autonomy, low autonomy, and high autonomy, keeping 'no autonomy' as a reference category.

Table 2.5 Variables and Score used in Computing Autonomy Index

Variables	Categories	Scores
Who make decision regarding household purchase, health care and family visit	Self Husband or in-laws	1 0
Allowed to go to the market or health facility or nearby village alone	Yes No	1 0
Who decide how your earning should be used.	Self Husband or in-laws	1 0

Mother's BMI: Body mass index of women has also been collected and included in the study area with the view that there is an intergenerational association in nutritional status between mother and her child. It is generally believed that undernourished mother will have underweight babies. The mother's nutritional status is determine through BMI and has been categorised into 3 groups: Below 18.5 kg/m2 (underweight), between 18.5-25kg/m^2 (normal), more than 25 kg/m^2 (obese). 'Underweight women' are kept as reference category here.

Time for child care: Time for child care has been categories on the basis of hours spent by mother on child care. Mother's time on child care has been categorised as: less than 3 hours, 3-5 hours and more than 5 hours. 'Child care less than 3 hours' is used as reference category.

Child taken care in the absence of mother: Apart from mother time for child care, the information on child care in mother absence has also been included in the study. If alternative caregiver is present in the family, mother's work may not have a direct relation with child nutrition. Child care in mother absence has been categorised into two sub groups Yes and No taking 'Yes' as a reference category.

Mother's leisure time: Considering mother time for leisure as an important predictor of child nutrition, it is included in the analysis. Mother time for leisure is categorised into 2 sub groups: less than 3 hours, and more than 3 hours. 'Less than 3 hours' is taken as reference category.

Exclusive breastfeeding: Breastfeeding which indirectly influence the nutritional status of a child has also been considered as one variable and has been categorised into two sub groups: exclusively breastfed and not exclusively breastfed. 'Not exclusively breastfed' is chosen as a reference category.

Hygiene Index: Good hygiene practices are the key ingredient that can free children from all from of malnutrition (UNICEF, WHO, World Bank Group, 2017). To show the impact of hygiene practices, hygience index has been computed by taking four variables and has been categorised into 3 sub groups (Table 2.6): Low, medium and high taking 'low hygiene index' as a reference category.

Table 2.6 Variables used in Computing Hygiene Index

Hand wash before preparing food of a child	Yes 1 No 0
Hand wash before feeding a child	Yes 1 No 0
Soap used for hand wash	Yes 1 No 0
Treated water given to child	Yes 1 No 0

Programmatic factors/predictors

Among programmatic factors information on immunisation, utilisation of health services, access to ICDS, growth of a child recorded, and access to supplementary nutrition has been included in the study.

Immunisation: The question related to immunisation has been included in the study in order to know association with the health status of the child. A child in the age group of 12-23 months is said to be fully immunised if he/she received BCG, measles, and three doses each of DPT. The child has been categorised into two groups i.e. fully

immunised and not immunised. ‘Child without immunisation’ is taken as reference category.

Access to ICDS: Integrated Child Development Services whose one of the major aims is to cover the child age below 5 year under its scheme to improve the nutritional status of the child has also been included in the study. Each child included in the study has been categorised into two groups: child access to ICDS and the child not access to ICDS. ‘Child not access to ICDS’ is kept as reference category.

Growth of a child recorded: Height of the child also determines the nutritional status of a child. ICDS directs Anganwadi workers to record the height of the child to monitor their nutritional status. If a child fall below the recommended height by age then the child is given special attention by referring to ask better health centers. The growth of a child recorded is categories as yes and no. ‘Growth of a child not recorded’ is taken as reference category.

Utilisation of health services: Treatment seeking behaviour also influences the nutritional status of a child. The question on treatment sought for last illness is asked among women which is grouped as institution and non institution. ‘Institution’ is taken as the reference category.

Supplementary nutrition: Supplementary food is provided to children through ICDS centers to improve the nutritional status of the child. It is infact one of the important measures taken by the government to combat child malnutrition. The variable is categorised into two subgroups: access to supplementary nutrition and not access to supplementary nutrition. ‘Child no access to supplementary nutrition’ is chosen as the reference category.

CHAPTER -3

CHAPTER 3

LIVING CONDITION OF TEA GARDEN WORKERS BY OWNERSHIP PATTERN

3.1 Introduction

The main purpose of this chapter is to look at the overall condition of tea gardens dwellers in the context of widespread crises in Tea Plantation sector. It also aims to highlight the negligence and high-handedness of tea authority towards the social and economic development of tea gardens workers. The field survey conducted in the tea gardens of Darjeeling provides information on socio-economic as well as the living condition of people. The availability of basic facilities, nature of work, their living condition, and food habits has a direct bearing on the health of workers and their child. The chapter has been segregated into two sections. The first section will look at the availability of different amenities in Darjeeling and in tea gardens separately based on secondary data (Census of India). The second section will explore and throw light on the condition of tea gardens workers based on the primary survey by type of ownership pattern.

The condition of workers employed in tea garden is governed by the Plantation Labour Act, 1951 and the rules promulgated by the State government. The Plantation Labour Act inter-alia requires the employer to provide the workers and their family members medical, housing, sickness and educational facility and various other social security benefits. To some extent, an attempt has also been made to explore and highlight some of these aspects provided to tea garden employee by the tea garden authority.

3.2 Plantation Labour Act, 1951

In 1951, the Parliament passed the Plantation Labour Act which sought to provide for the welfare of labour and to regulate the conditions of workers in plantations. Under this law, the state government has been empowered to take all feasible steps to improve the living condition of the plantation workers. Some of the relevant provision as to health and welfare in the Plantations Labour Act are as follows:

3.2.1 Provision to Health (facilities to be provided by the employers in the Plantations)

Drinking Water: Effective arrangements shall be made to ensure a sufficient supply of drinking water in the plantations for all workers.

Conservancy: There shall be sufficient number of conveniently situated and accessible separate latrines and urinals for males and female in every plantation. All latrines and urinals provided shall be maintained in a clean and sanitary condition.

Medical Facilities: In every plantation, medical facilities for workers and their families have to be provided and maintained by the employer as prescribed by the State Government. In the absence of such prescribe medical facilities, the chief inspector has to provide and maintain such facilities and recover the cost from the defaulting employer.

3.2.2 Welfare

Canteens: The state government has been empowered to ask employers to open canteens in plantations wherein one hundred and fifty workers are employed. More than one canteen can be provided and maintained by the employer in the plantation for the use of the workers.

Creches: In every plantation, wherein fifty or more women workers are employed or the number of children of women workers is twenty or more, there shall be provided and maintained by the employer suitable rooms for the use of children of such women workers. Creches are to be maintained in a clean and sanitary condition, adequately lighted and ventilated, and are under the charge of a woman trained in the care of children and infants as per the law.

Recreation Facilities: The state government asks employers to make provision in the plantation for recreational facilities for the workers and their children.

Educational Facilities: The workers employed in any plantation have children between the ages of six and twelve exceed twenty-five in number, the employer is under obligation to provide educational facilities.

Housing Facilities: It is the duty of the employer to provide and maintain necessary housing accommodation for every worker residing in and outside the plantation. Every worker is entitled to a housing accommodation after six months of continuous service. In case of accidents resulting from the collapse of houses, the employers are liable to pay compensation to the workers or his kin suffering injury or death.

3.2.3 Other Facilities: The State government is empowered to make rules requiring the plantation employers to provide the workers with umbrellas, raincoats or other amenities for the protection of workers from rain or cold.

SECTION-1

3.3 Tea Gardens by Availability of Different Amenities

Census of India (2011) provides information on the availability of basic amenities. Table 3.1 shows the distribution of tea gardens according to the availability of different amenities. The table indicates that out of total notified 87 tea gardens in Darjeeling only 10 gardens have educational facility above secondary level. None of the tea gardens in Darjeeling have college. Further looking at the medical facilities in the tea garden of Darjeeling very disappointing picture has emerged. Medical facilities which are also an important condition of tea garden authority to provide to the workers according to the plantation act, a large number of tea gardens still do not possess any medical facilities. Out of total tea garden, only two tea gardens have hospitals, four have Community Health Centers, and four have Primary Health Centers, 26 tea gardens have Sub Center and 30 Dispensaries. Only 81 tea gardens have access to drinking water. Less than 50 percent i.e. 39 percent (34 tea gardens) has post office, 58 have drainage facilities, 74 tea gardens which come to 85 percent are under mobile coverage, 62 tea gardens (71 percent) have transport facilities. However, all the tea gardens are electrified. But it is very disappointing to see that out of 87 tea gardens only 3 tea gardens i.e. 3.4 percent has bank facilities and only 48 tea gardens i.e. 55 percent are approached by pucca road.

Table 3.1 Distribution of Tea Gardens according to the Availability of Different Amenities, Census 2011.			
Available Amenities in TG	Tea Gardens (N)	Tea Gardens (in %)	Sample Tea Garden having Facilities (N)
Education*			
Primary school	84	96.6	10
Middle school	41	47.1	6
Secondary school	18	20.7	1
Senior secondary school	10	11.5	0
Medical facilities			
CHC	4	4.6	1
PHC	4	4.6	2
Sub Center	26	29.9	5
Hospital	2	2.3	1
Dispensary	30	34.5	5
Drinking water@	81	93.1	8
Post office**	34	39.1	6
Drainage ^	58	66.7	3
Mobile coverage	74	85.1	5
Transport communication#	62	71.3	4
Banks$	3	3.4	2
Approached by pucca road	48	55.2	7
Power supply	87	100.0	10
Total Tea Garden (N) 87			**Sample Tea Garden 10**

*Education includes all education facilities except college

@Drinking water includes treated tap water, untreated tap water, and spring water

**Post office includes post office, sub post office and post and telegraph office

^Drainage includes open drainage

#Transport communication includes availability of public bus, private bus, van and taxi

$ Bank includes Commercial Bank and Cooperative Bank.

Source: Primary Census Abstract, 2011

Similarly, availability of different amenities in the sample tea garden according to census 2011 (Table 3.1) indicates that all the selected tea gardens have a primary school, but the numbers of tea gardens having higher education facilities are less. Six tea gardens have middle school, and only one tea garden among 10 has a secondary school. Tea gardens with medical facilities also reveal a destitute condition. Only one tea garden has Community Health Center and Hospital, two tea gardens have Public

Health Center, and five tea gardens have Sub Centers and Dispensary. The remaining two tea gardens are not served with any health facilities. Further, eight tea gardens have access to drinking water, but while looking at the quality of water supplied to the tea gardens it was revealed that only one tea garden has access to treated tap water. five tea gardens are supplied with untreated tap water out of which two are not functioning during the dry season, and the remaining tea gardens use spring water for drinking purposes. Similarly looking at the sanitary facility, three tea gardens have a drainage system which is uncovered and open, and only one tea garden with community toilet facility. Two tea gardens have bank facility, five have mobile coverage, six have post office, seven are connected through pucca road and all the tea gardens are electrified.

Thus looking at the amenities available in the tea gardens of Darjeeling it is very clear that apart from electricity all the tea gardens are deprived of most of the basic facilities. They are not even supplied with the minimal requirement. Educational facility, medical facility, availability of drinking water, drainage system all are lacking in the tea gardens of Darjeeling. From this data, one can imagine what impact it has been posing on the health of the people living in the tea gardens of Darjeeling.

3.4 Socio-economic and Demographic Characteristics of the Study Population

In order to know the differences in the socioeconomic and demographic condition of tea garden dwellers from that of village dwellers, secondary data from census, 2011 has been used. Further, the data of village and tea gardens of Darjeeling is compared with the overall Darjeeling and West Bengal respectively (Table 3.2). Not much variation in the indicators has been observed. However, it is interesting to note that sex ratio, as well as child sex ratio, is more favorable to females in tea gardens. Further looking at the work force participation, the percentage of female workers is higher in tea gardens than in villages. The gap of 10 percent has been observed between male and female workforce in Darjeeling tea gardens whereas 25 percent in case of villages. However, the percentage of male workforce participation is lower in tea gardens than in villages. In case of social groups, the percentage of schedule caste is higher in West Bengal, but the percentage of schedule tribe is higher in Darjeeling district. In the villages and tea gardens, it is observed that the more tribal population

in concentrated in villages than in tea gardens whereas in case of schedule caste it is just opposite and more concentration is observed in tea gardens.

Table 3.2 Basic Socio-economic and Demographic Indicators of Study Population, Census 2011

Indicators	West Bengal	Darjeeling District (Total)	Darjeeling (Village excluding Tea Garden area)	Darjeeling (Only Tea Garden area)
Population	91276115	1846823	359502	215220
Sex Ratio	949	970	965	1011
0-6 Population	10581466	193169	35847	18297
Child Sex Ratio	955	953	936	973
Male Literacy rate	81.6	85.6	86.7	88.4
Female Literacy rate	70.5	73.3	74.9	71.0
Male Workers	57.1	51.2	51.1	43.1
Female Workers	18.1	22.4	26.3	32.3
Percentage of ST Population	5.8	21.5	33.7	27.0
Percentage of SC Population	23.5	17.2	5.3	6.4

Source: Primary Census Abstract, 2011

The background characteristics of the study population (Table 3.3) indicate that large percentage of women i.e. more than 40 percent are in the age group less than 25 years. Out of total children, 52 percents are males and 47 percent females. Hindu is the dominant religion with almost 70 percent, followed by Buddhist with 15 percent and Christians 9 percent. In case of Caste group, a large percentage of tea garden population belongs to Other Backward Caste. Around 80 percent of women in tea gardens of Darjeeling are literate, but only 7 percent have attained higher level of education. Most of the women are educated till the middle level of education after which the percentage of women in secondary and higher level decreases sharply. In case of husband's educational level, most of them have attained upto the secondary level of education, and their share above higher level of education is only 15 percent.

Table 3.3 Background Characteristics of the Study Population		
Background Characteristics	Number	Percentage
(Women current age) Less than 25	163	40.8
25-30	149	37.3
More than 30	88	22.1
(Sex of the child) Male	210	52.5
Female	190	47.5
(Child's age)12-23 months	97	24.3
24-35 months	94	23.5
36-47 months	103	25.8
48-60 months	106	26.6
(Religion) Hindu	286	71.5
Buddhist	62	15.5
Christian	34	8.5
Others	18	4.5
(Women education level) No education	85	21.3
Primary level	86	21.5
Middle level	130	32.5
Secondary level	70	17.5
Higher secondary level and above	29	7.3
(Husband education)No schooling	65	16.3
Primary level	56	14.0
Middle level	87	21.8
Secondary level	131	32.8
Higher secondary level and above	61	15.3
(Women work status) TG permanent worker	192	48.0
TG temporary worker	84	21.0
Other than TG worker	18	4.5
Non-worker	106	26.5
(Husband's work status) TG permanent worker	161	40.2
TG temporary worker	51	12.8
Other than TG worker	188	47
Total Sample	**400**	

Source: Computed from field survey data

As tea gardens prefer to engage female workers, more than 70 percent of women in the study area are working. Out of total working women, 48 percent are permanent tea garden employee, 21 percent are temporary and remaining 5 percent works out of tea gardens. Husband's work status also indicates that out of total workers, 40 percent are

permanent tea garden employee, 12 percent are temporary employee and remaining 47 percent are involved in an activity out of tea garden.

The findings from the secondary data indicate that there is a dearth in the provision of basic amenities in the tea gardens of Darjeeling. The next section discusses the findings from the primary survey conducted in the tea gardens of Darjeeling. Questions related to the living conditions in tea gardens especially their housing conditions, sanitation condition, drinking water facilities, and cooking fuel used were asked to the respondent. In addition income of the household, work status and their cultural practices are also included in order to understand the overall living condition in the tea gardens of Darjeeling.

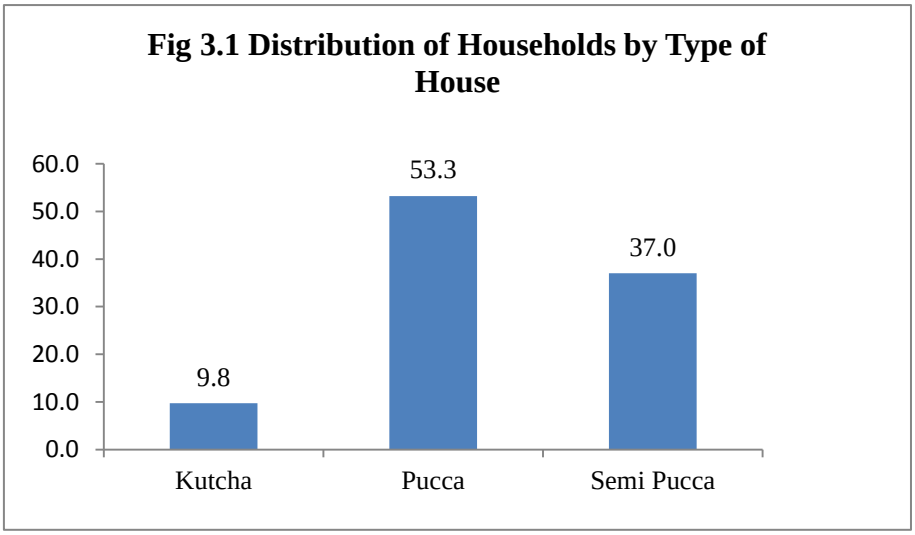
SECTION-2

3.5 Living Condition in Tea Gardens of Darjeeling

The living conditions include housing, sanitation, water supply, food habits, and cultural practices which have a clear reflection on health outcome. The main aim of this section is to examine and study a different aspect of living conditions necessary for the decent and healthy living of the household members. However, in order to know whether any variation exists in the living condition of workers by ownership pattern of tea gardens, an attempt has been made to explore and discuss the living condition separately by the type of tea garden ownership pattern.

3.5.1 Housing Condition: The tea garden workers are provided with housing facilities from the very beginning of the industry. Initially, housing facilities were available as long as they work in a particular plantation and on resignation or retirement from work the housing facilities were taken away from them. But, to ensure uninterrupted and continuous supply of labour, the descendants are absorbed in tea garden work and continue to live in the same dilapidated accommodation which is usually overlooked and least concerned to the planters. The most of the houses in the tea gardens are reconstructed or built by workers themselves. The house provided by the authority is of two rooms and one veranda which is further extended or reconstructed by the workers itself. The survey data on the structure of the dwelling

units indicates that 57 percent of the houses are pucca [4] structure, 37 percent are semi-pucca[5], and only 10 percent are kutcha[6] houses (Fig 3.1). But when the roof of the house including metal sheet is taken out from the definition of pucca house and only cemented plaster is included in the definition then the percentage of the pucca house drops to 20.5 percent from 57 percent.



Source: Computed from field survey data

Further looking at the number of rooms available for tea gardens workers approximately all the tea gardens have houses with 3 rooms. But it was also observed that 60 percent of those having kutcha house have less than 3 rooms but nearly 70 percent and 95 percent, semi pucca and pucca houses have more than 3 rooms respectively. It has also been observed that more than 20 percent of pucca houses in tea garden have more than 5 rooms. Facility of separate kitchen is available to 90

[4] A pucca structure is one whose roofs and walls are made of pucca materials such as concrete, cement, hollow cement/ash bricks, oven burnt bricks, stone blocks, timber, slate, tiles, asbestos cement sheet, plywood, jack boards (cement plastered reeds), iron, zinc or other metal sheets, corrugated iron, veneer, plywood, artificial wood of synthetic material and poly vinyl chloride (PVC) material.

[5] A structure which cannot be classified as a pucca or a kutcha structure as per definition is a semi-pucca structure. Such a structure will have either the walls or the roof but not both, made of pucca materials.

[6] A structure which has walls and roof made of non-pucca materials is considered as a kutcha structure. Non-pucca materials include unburnt bricks, bamboo, thatch, grass, mud, leaves, reeds, etc. By definition, Kutcha structures can be of the following two types; (i) Unserviceable kutcha structure, which includes all structures with thatch roof and thatch walls, i.e., roof made of leaves, grass, reeds, etc. and walls of a similar material and (ii) Serviceable kutcha structure, which includes all kutcha structures other than unserviceable kutcha structures.

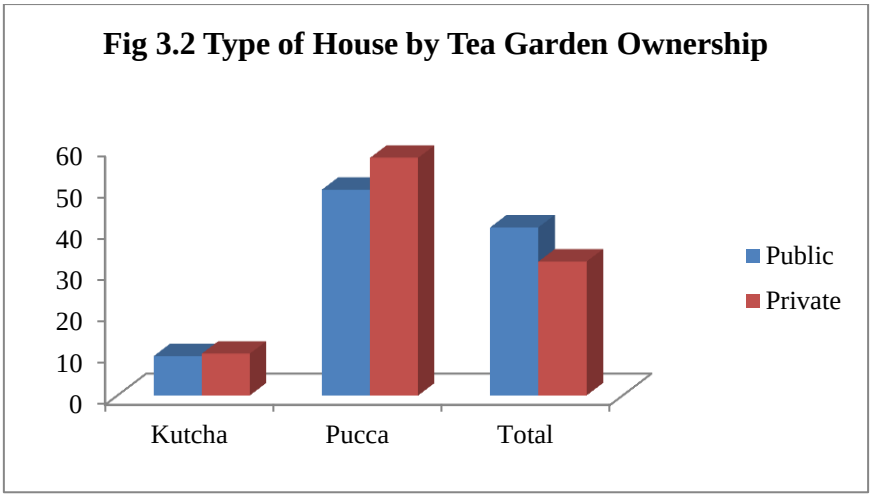
percent of the total houses but out of these 90 percent only 46 percent had a proper kitchen attached to house and the rest had a kitchen built either by extending the backyard or by building it separately from the house. The remaining 10 percent did not have a separate kitchen at all. They cook in the living room (Table 3.4).

Table 3.4 Distribution of Households by Place of Cooking		
Place of cooking	Frequency	Percent
No separate room	39	9.8
Separate room attached to house	184	46.0
Separate room not attached to house	177	44.3
Total	400	100.0

Source: Computed from field survey data

Plate 3.1 Pacca and Kutcha Houses in Tea Gardens of Darjeeling

The type of house by ownership (Fig 3.2) indicates that compared to the tea gardens owned by the public sector, the percentage of pucca houses is more in the tea gardens operated by private sector. The gap of 10 percent in pucca houses among public and private sector has emerged. The percentage of kutcha houses in both the sectors are 10 percent whereas in the case of semi-pucca houses the percentage is high in tea gardens owned by public sector.



Source: Computed from field survey data

3.5.2 Sanitation: For better sanitation, the Tea Board recommended that latrines be constructed behind every house at a distance of 20 inches from the main structure. To maintain better sanitation it has also recommended that at least 8 gallons of potable water per head per day should be provided. It specified that the source could be tube wells with proper plinths, ring wells, and tanks or piped water. Despite the efforts, tea gardens of Darjeeling do not have access to appropriate sanitation technology. The tea garden authority hardly gives any attention to sanitation. The toilets are not hygienic; around 17 percent of tea garden workers do not have access to toilets and have to defecate in open space (Table 3.5). Overwhelming majority i.e. 65 percent use pit latrine, out of which some are built by local material like rejected tin, plastic sag, making it uneasy to allow individual to use it comfortably. Only 17 percent have proper sanitary toilets in their dwellings.

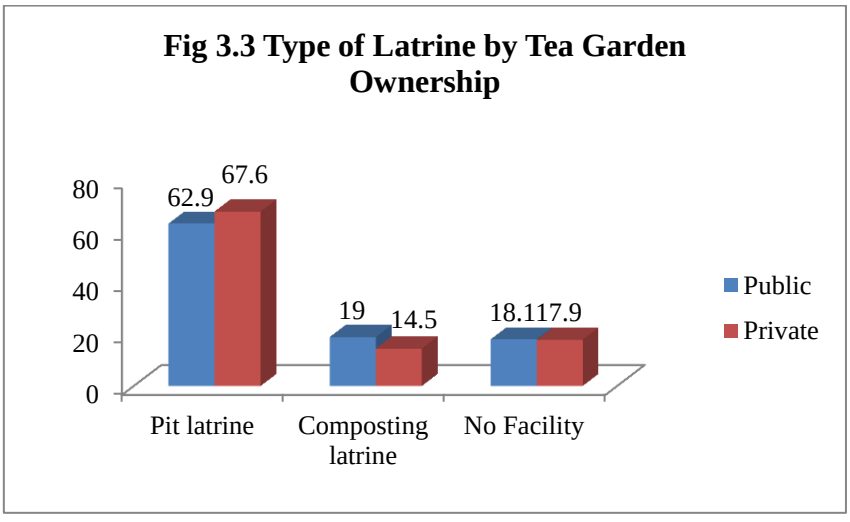
Table 3.5 Distribution of Households by Type of Latrine

Type of toilet	Frequency	Percent
Pit latrine	260	65.0
Composting toilet	68	17.0
No facility/use open space or field	72	18.0
Total	400	100.0

Source: Computed from field survey data

Plate 3.2 Toilets in Tea Gardens of Darjeeling

Type of latrine by tea garden ownership pattern does not show any variation (Fig 3.3). The houses with no toilet facility are 18 percent in both the ownership sector. It is interesting to note that houses having pit toilet are more in private sector whereas in the case of composite toilet, the percentage is high in public sector but the gaps are very minimal with only four percent.



Source: Computed from field survey data

3.5.3 Drinking Water: The main source of drinking water in the tea gardens of Darjeeling is natural spring water (called *dhara* in local language). More than 60 percent depend on dhara i.e. spring water, but some of these spring water dries up in dry season causing hardship to the labourer. At times they even have to queue up for a

long hour. The houses that can afford to fix pipes and draw water from the natural spring do not suffer much. Around 67 percent of total sample household have pipe supply water (Table 3.6). Some of the houses who draw water from neighbour have to pay Rs. 100 per month for the provision and maintenance. In all 29 percent of household fetch water from distance places. They carry water either from the community water supply or from the neighbour having water facility. There are also some tea gardens in which tea garden owner provides drinking water on tank two times in a day on an hourly basis. Only 4 percent depend on the drinking water provided by tea garden authority on tank on an hourly basis.

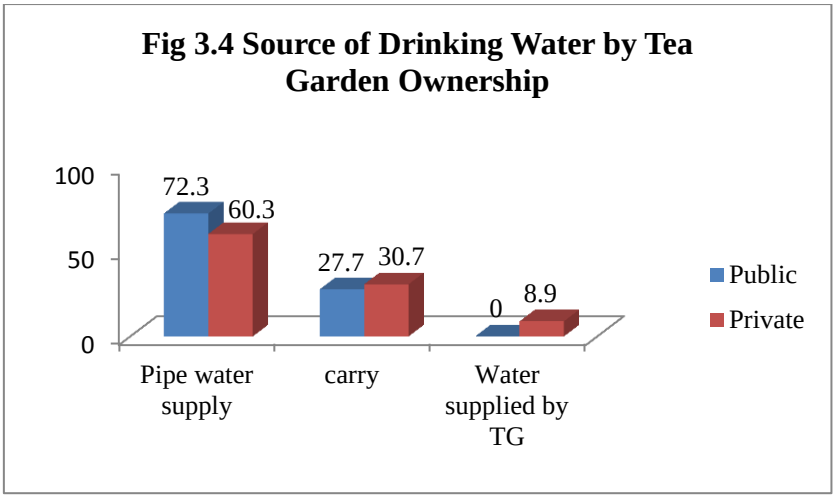
Table 3.6 Distribution of Households by Source of Drinking Water

Source of Drinking water	Frequency	Percentage
Pipe water supply/Spring	268	67
Carry	116	29
Other	16	4

Source: Computed from field survey data

Plate 3.3 Piped Water Supply and Spring Water in Tea Gardens of Darjeeling

Further looking at the source of drinking water in a household by type of tea garden ownership (Fig 3.4) it was revealed that the percentage of pipe water supply is more in public sector (72 percent) than private (60 percent). No tea gardens owned by public sector supply water to tea gardens. However, 9 percent households were supplied water on tank by tea garden authority owned by private sector.



Source: Computed from field survey data

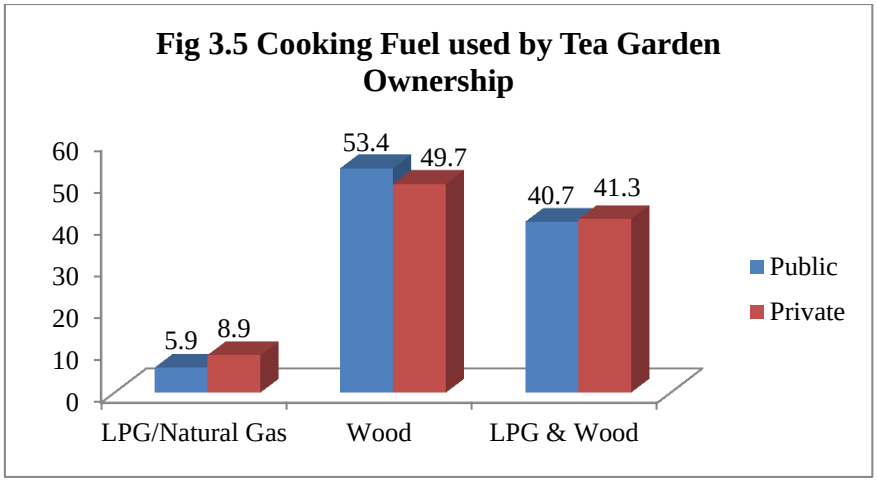
3.5.4 Cooking Fuel: In tea gardens of Darjeeling firewood is the common source of fuel. More than 50 percent depend only on firewood. When asked the source of firewood some reported that they collect the bushes that are thrown around them during pruning and other by gathering twigs which lie around the tea bushes. Further, they also mentioned the increasing difficulties in fetching firewood from nearby forest due to large scale deforestation and restriction in the region. It is observed that (Table 3.7) out of total sample households, 52 percent use firewood as a source of cooking fuel, 41 percent uses both LPG and firewood while only 7 percent depend fully on LPG. However, in case of household with separate kitchen, 86 percent use LPG gas.

Table 3.7 Distribution of Households by Cooking Fuel

Source of cooking fuel	Frequency	Percent
LPG/natural gas	29	7.3
Wood	207	51.8
Both LPG and wood	164	41.0
Total	400	100.0

Source: Computed from field survey data

Further, not much variation in the use of cooking fuel by type of tea garden ownership has been observed (Fig 3.5). However, slightly higher use of LPG as a fuel for cooking in private sector (9 percent) than in public sector tea gardens (6 percent) has been observed.



Source: Computed from field survey data

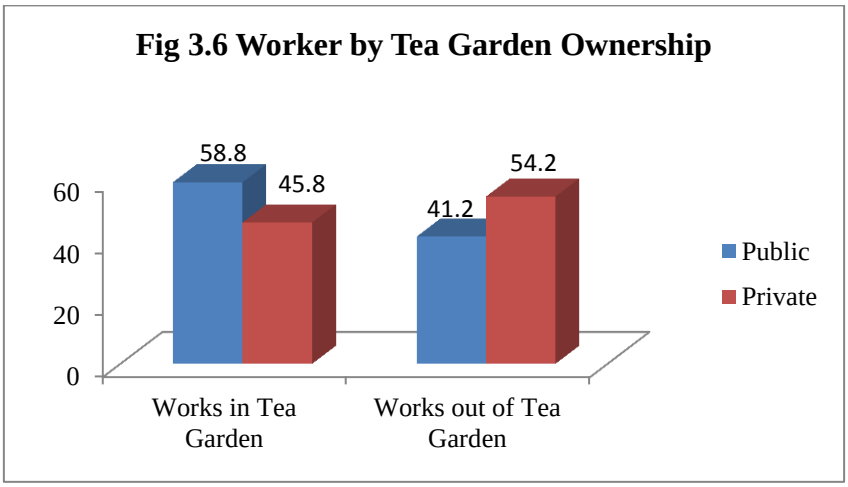
Plate 3.4 Fuel used in Cooking in Tea Gardens of Darjeeling

3.5.5 Condition of Work: Since its beginning, tea industry has played a significant role in the socio-economic lives of people of the region by providing direct employment, but in last three-four decades with the decline of the tea industry, livelihood is challenged because no other large industries, except tourism, is established in the region. This gradual decline of the Darjeeling tea industry has affected the sustainable livelihoods of plantation workers (Tirkey and Nepal, 2012). Further, the continuous increase in population in tea gardens has also been one of the main causes of worry. With the increase in population and decline in the tea industry, unemployment in tea gardens has increased which has compelled people to search for alternative livelihoods. The findings from the sample tea gardens have revealed that

almost half of the tea garden dwellers are employed in the economic activities out of tea garden. Overall 47 percent of male workers have already found an alternative source of livelihood (Table 3.8).

Table 3.8 Distribution of Workers by Type of Work		
Work Status	Frequency	Percentage
Works in Tea Garden	212	53
Works out of Tea Garden	188	47

Source: Computed from field survey data



Source: Computed from field survey data

Further, the source of livelihood by type of tea garden ownership (Fig 3.6) indicates that more workers from the tea gardens owned by private sector work out of tea garden than the public sector. Around 59 percent of workers in the public sector depend fully on tea garden for their livelihood whereas only 46 percent in the case of private sector.

Looking at the wages of the tea garden labour it is observed that no worker is paid on a daily basis, their payment is based on 12 days basis and receives a daily wage rate of INR 95. It has also been revealed that the tea gardens workers who are assumed to be a part of the organised sector, receives pay even lower than the wages in the unorganised sector. The wage rate for workers in West Bengal for MGNREGA is around 174 and for agricultural labourers is Rs. 206 per day which is far more higher than the revised wage rate of tea garden workers in 2016 after post field survey i.e.

Rs. 132.50. The low wage of tea gardens workers is always justified with regular employment and providing basic amenities. They are forced to work in wages which are far below the minimum in any form of work. The average monthly income of permanent and temporary workers goes up to Rs. 1950 and Rs. 2250 irrespectively of male and female.

The average monthly income of the household in the tea garden is Rs. 2092 (Table 3.9). The minimum monthly income observed in the tea gardens of Darjeeling is Rs. 375 which is very less to support their family lives when living cost is increasing sharply. The average monthly income of those who are working in the tea garden is Rs. 1394 and that of those who are working out of tea garden is Rs. 2762. The huge difference of Rs. 1370 is observed between two groups of household with a different source of livelihood pattern. Further, average monthly income of the household in tea gardens owned by Public sector is Rs. 1978 whereas Rs. 2232 in Private sector tea garden.

Table 3.9 Monthly Household's Income by Tea Garden Ownership

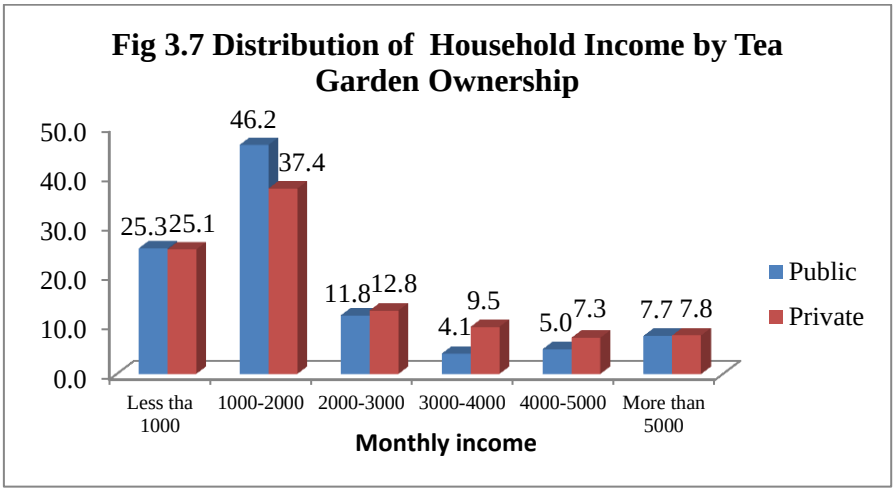
	Total	Public	Private
Minimum	375.00	375	487
Maximum	8983.33	8983	8390
Mean	2092.19	1978	2232
Std. Deviation	1684.65	1625	1750

Source: Computed from field survey data

Distribution of sample household based on the level of monthly income is shown in table 3.10. The table indicates that large percentage of tea garden household i.e. 66.6 percent has less than Rs. 2000 monthly income and very few household i.e. around 8 percent have more than Rs. 5000 per month. Further looking at the distribution of household income by the type of tea garden ownership it indicates that compared to public sector household, the private sector tea gardens has better income. 75 percentage of total household have monthly income less than Rs. 2456 (Table 3.11). Similarly, in case of public and private sector tea garden 75 percent of household have monthly income less than Rs. 2302 and Rs. 2999.

Table 3.10 Distribution of Households by Monthly Income		
Income	Frequency	Percent
Less than 1000	101	25.3
1000-2000	169	42.3
2000-3000	49	12.3
3000-4000	26	6.5
4000-5000	24	6.0
More than 5000	31	7.8
Total	400	100.0

Source: Computed from field survey data



Source: Computed from field survey data

Table 3. 11 Quartile Distribution of Households by Monthly Income in Public and Private Sector Tea Gardens			
Quartiles	Total	Public	Private
Q1	1000	1000	990
Q2	1400	1316	1560
Q3	2456	2302	2999

Source: Computed from field survey data

3.6 Cultural Practices in Tea Gardens of Darjeeling

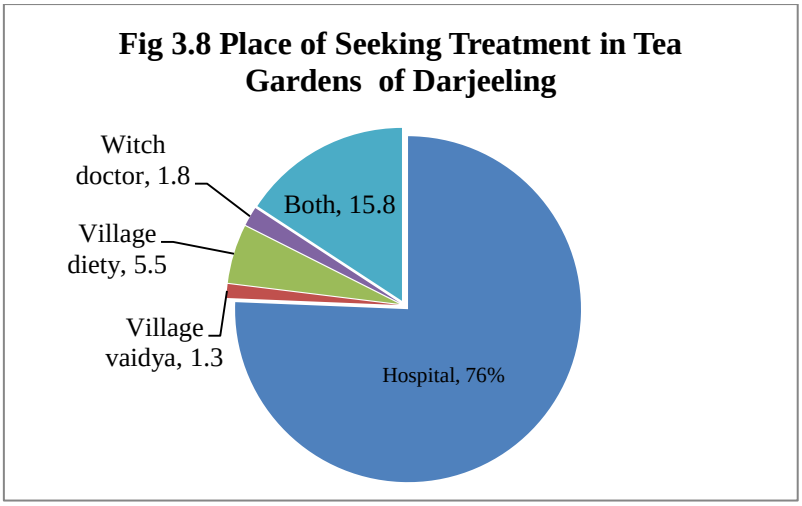
Apart from physical aspects, the living condition of people in any area is also reflected by their cultural practices. Some of these practices practiced in the tea gardens of Darjeeling will be highlighted in this section. Cultural practices include a broad range of activities, such as religious and spiritual practices, medical treatments and customs, dietary habits, and child care. It encompasses everything or subset of ethnicity, language, religion, customs, practices, social relationships, art, costumes as well as behavior pattern of any particular group. But keeping all these cultural elements aside, this section tries to explore health practices, feeding practices and

some behavioural pattern of tea garden dwellers. Their influence on health is vast. It affects perceptions of health, illness, beliefs about causes of disease, approaches to health promotion, how illness and pain experience and expresses, where patients seek help, types of treatment patients prefers and who should be involved in the process.

3.6.1 Health Practices: In order to capture the health belief and practices in the tea gardens of Darjeeling the questions like "Do you believe in supernatural forces/witchcraft?" is asked among tea garden women. Further, the questions like- "Have you ever taken your child to a faith healer, village deity, village vaid for treatment?" are included in order to capture the treatment seeking behaviour of tea garden people. All the elements like belief in the traditional healer, faith healer, belief in supernatural forces, magical practices may directly or indirectly influence the health of people. Around 79 percent of tea garden women of Darjeeling believe in supernatural forces and when asked, where do they take their child for treatment, 76 percent responded that they go to hospital, 1.3 percent goes to village vaidya, 5.5 percent to village deity, around 2 percent to witch doctors and around 16 percent reported that they take their child to hospital as well as village deity (Fig 3.8). A similar pattern in the treatment seeking behaviour among people residing in public and private sector tea garden is observed.

24-year-old respondent (mother of a child) from Ambootia tea garden said-
"Whatever may be the sickness I first take my child to village deity or faith healer and after showing them if the baby doesn't recover then I take him/her hospital".

"28-year-old respondent (mother of a child) from Tukvar tea garden said-
"*Yes I believe in evil spirit and to cure I take my child to Village Deity. Last time when my child suffered fever I took her to hospital but the medicine did not work on her. Then my in-laws suggested to consult me village deity, the lady gave some rice to keep under the child's pillow. The baby started recovering from next day".*



Source: Computed from field survey data

3.6.2 Dietary Habits: Tea gardens dwellers generally eat three meals a day. Some of the respondents eat four times, and majority follows a fixed meal time. Breakfast is early because of work which starts at 7 in the morning. Child above the age of 1 is usually served with same food as adults. Their main source of calories is rice which is the part of the daily food. Some eat rice early in the morning, and leftover is eaten for lunch. The habitual diet of community members comprised of Rice, Roti, Dal and locally available seasonal vegetables, cultivated green leafy vegetables, roots, and tubers. Animal foods, the source of protein are consumed occasionally. Some of them keep poultries to meet their demand for meat. Milk and another source of protein are consumed only on those houses who can afford it as the domestication of animals in tea gardens are very rare, and most of them have to buy from the local supplier. Black tea with salt is regularly consumed by the dwellers. Basically, most tea garden dwellers eat similar kind of food.

3.6.3 Food Beliefs and Practices during Pregnancy and Lactation: Nutritional status during pregnancy is extremely important as it influence the pregnancy outcome (WHO, 1989). The findings indicate that the mother did not follow any special feeding practiced during pregnancy as it continued to eat the same food as before they were pregnant. Most of the women realized that they were pregnant only three to five months after gestation and avoided papaya, pineapple, and watermelon with the belief that it might abort the baby. Even after the birth of a child, the first one to two weeks mother is restricted to take normal diet. The mother eats rice with water and salt, and sometimes soup made up of vegetables and chicken. Some of the food items like pig,

red meat, buffalo and fermented products are considered taboo. During the survey in the study area, it was observed that it's the member of poor families who strictly adheres to food restriction. Only 62 percent of total birth took place at institutions and the rest in the home. Though most of the births occurred at home are attended by a traditional birth assistant, but their skill is not sufficient to change feeding practices. Almost all the new borns are given breast milk, but only a few were given colostrums and exclusively breastfed.

The respondent (mother of a child) said *"colostrums are not white as milk as it is not ripped and should be discarded or it will cause diarrheao to a new born."*

The above-discussed finding clearly indicates the deplorable living condition of tea garden dwellers. They are deprived of many basic amenities like housing, sanitation, and drinking water. Not much variation in the living condition of people in tea gardens by ownership pattern has been observed. But, in order to compare situation between public and private owned tea garden, a composite index of Well-being in tea gardens of Darjeeling has been constructed.

3.7 Well-being Index: Comparison between Public and Privately Owned Tea Gardens

The detail list of the variables used for the construction of a composite index of well-being is given in Table 3.12. The variables selected for the construction of an index are the facilities that should be provided by Tea Garden Authority for the welfare of the employee. The method used in constructing index is Principal Component Analysis (PCA). Through this index comparison in the welfare of workers by tea garden ownership has been made. In this analysis all the variables used are unidirectional. Higher the amenity score, better the situation is.

The table 3.13 shows the Well-being Index by tea gardens ownership pattern. This well-being index has been constructed for public and private separately in order to know which sector of tea garden provides better welfare of the workers. The Well-being score varies between -2.31 to 2.21 and has been categorised into three subgroups.

Table 3.12 Variables used for Construction of the Well-being Index		
Serial No.	Variables	Category
1	House Type	Temporary 1, Semi-permanent 2, Permanent 3,
2	No. of Rooms	Less than 2 rooms-1, 2 to 4 rooms-2, More than 4 rooms-3
3	Availability of Toilet facility	No toilet 0, pit toilet 1 composting 2
4	Availability of Electricity	No 0, Yes 1
5	Availability of Drinking Water Facility	No 0, Yes 1
6	Availability of Medical Facility	No 0, Yes 1
7	Availability of Education facility	No 0 Primary level 1 Primary and Secondary 2 Primary, middle and secondary 3
8	Availability of Creches facility	No 0, Yes 1

The analysis indicates (Table 3.13) that on an average 37 percent of total sample households both in public and private score less than 0 i.e. it fall in the low well-being index. There is not much variation in the well-being index by tea garden ownership pattern in low category. However, a huge variation in the middle and high category of well-being index by tea garden ownership pattern has been observed. Out of total household in public sector, 49 percent fall under middle category whereas 35 percent in private sector lies in the same category. In case of high category of well-being index 14 percent falls in public sector and 29 percent in private sector. This indicates that the percentage score in higher category of well-being index is higher in private sector compared to public sector tea garden which indirectly indicates that the tea garden owned by private sector provide better welfare to the tea gardens dwellers compared to the dwellers of public sector tea garden.

Table 3.13 Well-being Index by Tea Garden Ownership						
Well-Being Score	Public Tea Garden		Private Tea Garden		Total	
	N	Percentage	N	Percentage	N	Percentage
Low	81	37	57	36	138	36
Medium	109	49	63	35	172	43
High	31	14	52	29	83	21

Source: Computed from field survey data

3.8 Conclusion

Tea gardens of Darjeeling are deprived of many basic facilities which have been revealed through secondary as well as the primary field survey data conducted in the selected tea gardens of Darjeeling. They are not even supplied with the minimal requirements. Apart from electricity, all the tea gardens are deprived of their basic facilities. Educational facility, medical facility, availability of drinking water, drainage system, transport facilities, banking facilities, etc. are lacking in the tea gardens of Darjeeling. Only 11 percent of all the notified tea gardens have educational facilities above secondary level. Most of the tea gardens do not have medical facilities. Around 10 percent and 36 percent do not have drinking water and drainage facilities. Almost half of the tea gardens are not approached by pucca road, and one-third do not have access to transport facilities. Also, bank and post office facility are inadequate. The living condition of the workers in the tea gardens is also no better. The tea garden authorities are not paying much attention in improving their living condition. Their low wages is always justified with generating employment and providing some basic amenities and facilities to workers and their families. Houses for workers were to be constructed by the employers according to the Act, but most of the workers construct and extend at their cost. More than 20 percent household doesn't have access to a latrine and defecates in an open space. Cultural practices also hold a significant position in the tea gardens of Darjeeling. A large number of population in the tea gardens seems to believe in the traditional healer, faith healer, supernatural forces and magical practices. Culturally based food consumption patterns and restrictions are common in the tea gardens of Darjeeling. Most importantly, nutritious foods such as animal meats that lactating women need to regain their health are prohibited. Consequently, the health of mothers and their young children is compromised.

Further, looking at the living condition of workers by the type of tea garden ownership pattern, not much variation is observed. However, the slightly better picture is observed in the tea gardens owned by private sector which could be due to better facilities provided by tea garden authorities in private sector. Or it could be due to the fact that larger percentage of workers in the tea garden owned by the private sector is engaged in an economic activity out of tea garden where income is high. Though in both the sectors a considerable number of workers are engaged in

economic activity out of tea garden, their source of livelihood can be categorised into two groups i.e. fully dependent on tea garden and partially dependent on tea garden for livelihood.

The next chapter will identify and discuss the occupational combinations among tea gardens dwellers and the variation with the nutritional status of the child.

CHAPTER -4

CHAPTER 4

OCCUPATIONAL COMBINATION AND NUTRITIONAL STATUS OF THE CHILD

4.1 Introduction

In the present context, the sources of livelihood among tea garden dwellers are changing. The stagnant growth of tea industry with minimum wage rate and lack of basic facilities have compelled the people of tea gardens to find alternative sources of livelihood. It is noticed that tea garden dwellers depend on a number of livelihood sources outside tea gardens, but employment in the tea garden remains the mainstay for more than half of the population. Keeping this point in mind the first section of this chapter attempts to identify the possible occupational combination among tea garden couples. This section also attempts to explore how the occupational combinations of tea garden couples influence the nutritional status of a child. In other words "*if either of the couples is employed in an activity out of tea garden how the nutritional status of a child varies from the couples who are fully depended on tea industry for their livelihood*." Separate analysis for couples fully dependent[7] and partially dependent[8] on tea gardens for their livelihood has been presented.

Before discussing the nutritional status of children by the couple's occupational combination, a brief overview of the nutritional status of children of Darjeeling in general and the nutritional status of children of tea gardens of Darjeeling, in particular, has been discussed.

4.2 Nutritional Status of Children in Tea Gardens of Darjeeling: Diet and nutrition are the most important indicators of the health of the people. Many socio-demographic and economic factors influence the health and nutritional status of a child. Besides, lack of proper food, housing, sanitation and drinking water also has a strong bearing on the nutritional health of a child (Esrey, 1996; Daniels et al., 1991). The report by Centre for Education and Communication exposes the deplorable conditions under which the tea plantation workers of Assam and Bengal are living.

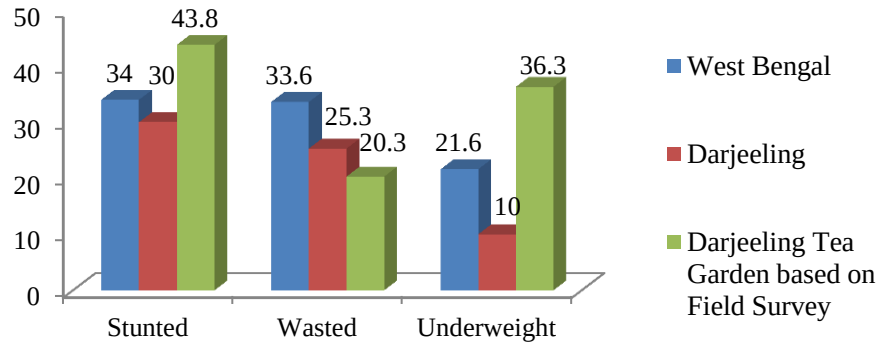
[7] Fully dependent: Those couples having only one source of livelihood i.e. tea industry.

[8] Partially dependent: One from the couple working out of tea garden. They depend on more than one source of livelihood provided that one from the couple must be working in the tea garden.

The previous chapters have already thrown light on the pitiable socio-economic condition of tea gardens dwellers. Since reliable information on the health and nutritional status of the workers and their children at ground level are not available, further research has been done assuming that there is a possibility of having the low nutritional status of children.

The available data from NFHS 4 for the district of Darjeeling on the nutrition indicates that compared to the state level nutritional status of a child, Darjeeling is in better condition. Fig 4.1 present the percentage of children who are undernourished according to height for age (stunted), weight for height (wasted), and weight for age (underweight) for West Bengal and Darjeeling based on NFHS 4, and tea gardens of Darjeeling based on primary survey. It indicates that compared to state level which has recorded 34 percent, 22 percent, and 37 percent stunted, wasted and underweight, Darjeeling has better nutritional status with 30 percent, 10 percent, and 25 percent respectively. But the data collected from a primary survey from Tea Gardens of Darjeeling reveals deplorable situation with low socioeconomic condition accompanied by worst nutritional status. The findings from the primary survey data on nutritional status of the child are in contrast to the results from the secondary data from NFHS 4 for the district. The percentage of children with stunted, wasted and underweight in tea gardens of Darjeeling are 44 percent, 20 percent, and 36 percent respectively which is much higher than the nutritional status at a District level.

Fig 4.1 Nutritional Status of Children in West Bengal, Darjeeling and Tea Gardens of Darjeeling



The additional information regarding the nutritional status of a child by sex is given in Fig 4.2. It is interesting to note that no significant difference in the prevalence of undernutrition between male and female child exit in the study area. This finding is somewhat surprising, as at the national level there is widespread discrimination between male and female child. This can be observed as non-discriminatory treatment on the basis of the sex of the children.

Fig 4.2 Nutritional Status of Children by Sex in Tea Gardens of Darjeeling

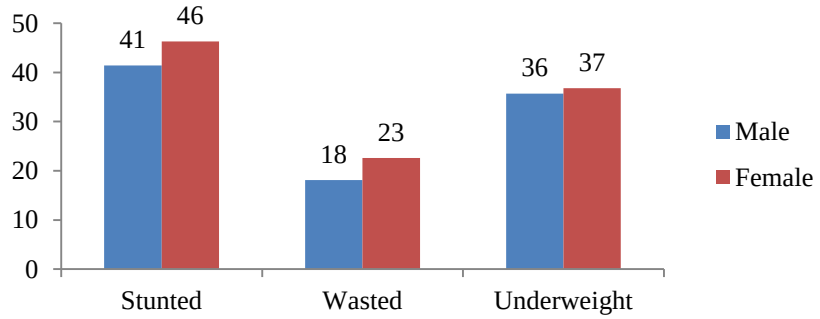
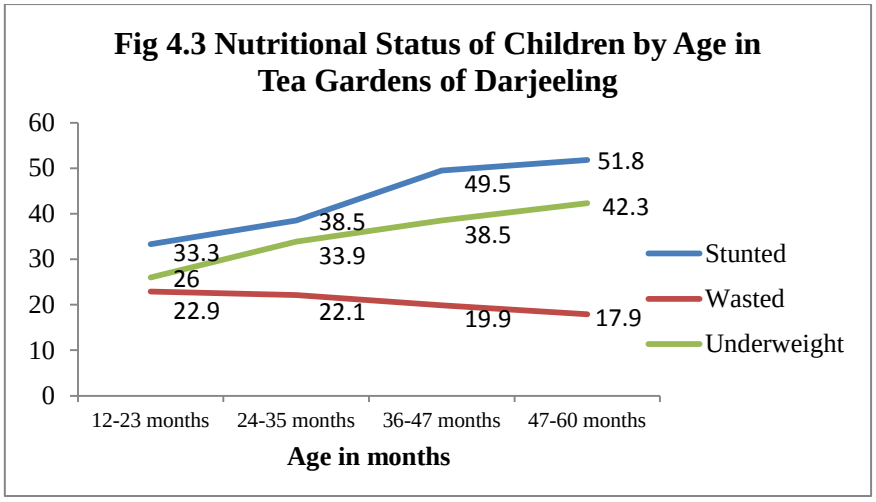


Table. 4.1 Nutritional Status of Children by Sex (Pearson's Chi-square Test)	
Stunted	9.68 (.325)
Wasted	1.27 (.260)
Underweight	.055 (.815)

Source: Computed from field survey data

Further, it has also been revealed that the proportion of stunted and underweight children increases rapidly with the child's age but the child with wasted decreases with age (Fig. 4.3). The sharp decline in the percentage of wasted at the age of 36-48 months has been observed after which there is almost smooth decline. In the case of stunted and underweight there is an increase in the percentages with age, but at the age of 4-5 the pace of increase slows down. This is mainly because at age 3 when breastfeeding is completely stopped in most of the child, percentages of undernourishment (stunted, wasted and underweight) suddenly increase and after which it maintains the stable pattern (Amugsi et al., 2013).



Source: Computed from field survey data

4.3 Diversification of Economic Activity in Tea Gardens of Darjeeling

Diversification of economic activities in tea gardens of Darjeeling is gradually increasing with time. The source of livelihood of tea garden dwellers has been sub-grouped into two categories i.e. fully dependent, and partially dependent on tea garden for livelihood. Fully dependent on tea gardens are the one where both the couples solely dependent on tea garden for their livelihood. Partially dependent are those when one partner work out of tea garden or their source of income is from tea garden as well as from outside tea garden.

The different source of household income by type of work among people residing in tea garden is as follows:

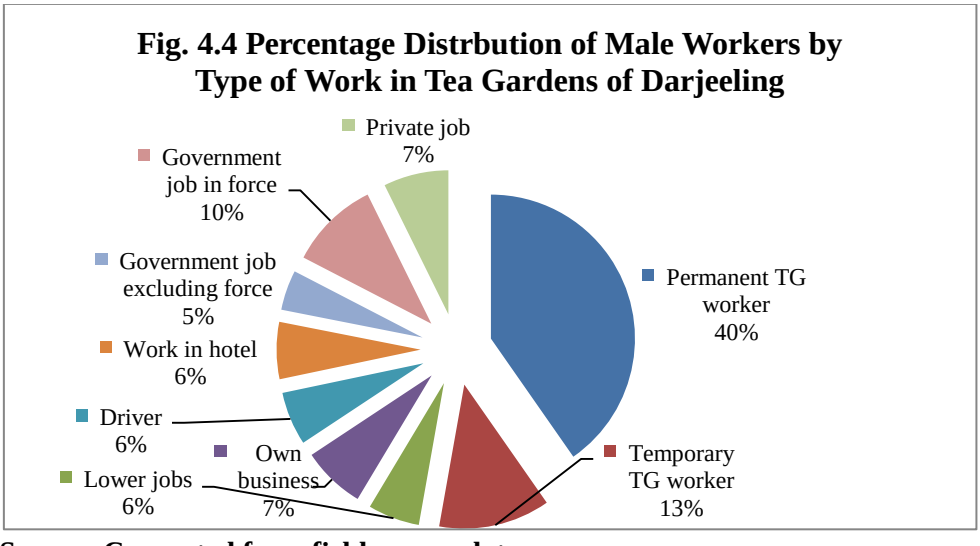
1. Tea garden worker i.e. temporary, and permanent
2. Working in lower income jobs such as agricultural labourer, MGNREGA, and seasonal worker.
3. Working in ICDS.
4. Working in hotel out of state.
5. Working as carpenter, tailor, and mason.
6. Running small grocery or provisional store.
7. Teaching in private and public school.
8. Working in government sector jobs such as police, army, civic police, village police and home guard.

4.3.1 Gendered Diversification of Work in Tea Gardens of Darjeeling

Gender operates at all level of social life and is deeply embedded in the type of work. In tea gardens of Darjeeling where plantation sector provide more employment especially among women compared to other sector of work, it is interesting to capture dimension of work sex wise. The pie chart (Fig 4.4) indicates that out of total male workers 53 percent are tea garden worker. Out of which, 40 percent are permanent workers and 13 percent temporary. The percentage of workers working in lower jobs which include agricultural labourer, cultivator, and 100 days worker is six percent. It has also been observed that the considerable number of males in tea gardens has their own business which includes having own shops, and small businesses like oranges, cardamom, betel nuts, etc. Six percent of workers are in the driving profession and hotel sector as a cook or a waiter. Apart from these, workers involved in the private job are seven percent. Further, quite a notable percentage of workers in tea gardens are engaged in government sectors i.e. 15 percent. Of these 15 percent, 10 percent are in lower rank armed forces, and the remaining five percent are in other government jobs. Here, by armed forces, it means police, army, home guard, village police and civic police.

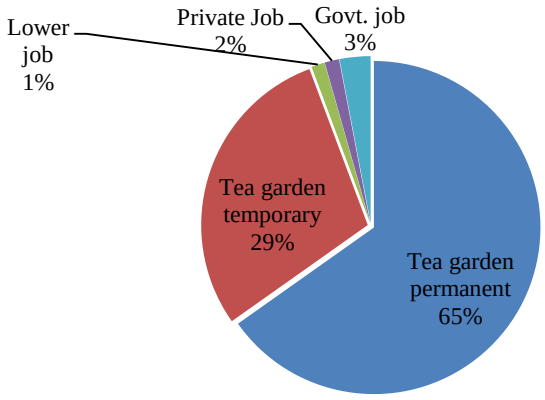
Further, it was also observed that large percentage of women in tea garden work as tea garden labourer. The pie graph (Fig 4.5) indicates that out of total working women in tea gardens of Darjeeling more than 90 percent work in the tea garden. Very few tea garden women work out of tea gardens, be it in menial jobs or better jobs.

Fig. 4.4 Percentage Distrbution of Male Workers by Type of Work in Tea Gardens of Darjeeling



Source: Computed from field survey data

Fig. 4.5 Percentage Distribution of Female Workers by Type of Work in Tea Gardens of Darjeeling



Source: Computed from field survey data

4.4 Nutritional Status of Children by Source of Livelihood

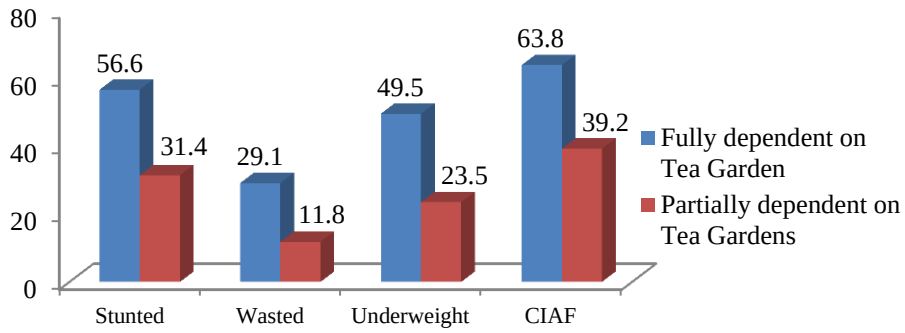
Out of total sample population, 49 percent are fully depended on tea garden for their livelihood whereas 51 percent are partially dependent. Further, looking at the nutritional status of the child by the occupational combination of the workers it is observed that, compared to couples who are fully dependent on tea garden for livelihood, the nutritional status is better for a child whose parents are partially depended on tea gardens. The graph (Fig 4.6) indicates a huge difference in the nutritional status of a child by two groups of couple's work combinations. The percentage difference in the case of stunted child between couples who are fully and partially dependent on tea garden for their livelihood is 26 percent. Those couples who are fully dependent on tea garden has 57 percent stunted child in comparison to 31 percent for those who are partially dependent. Similarly, the percentage gaps between two groups of working couples in case of wasted and underweight are 10 percent and 26 percent respectively. The percentage of wasted and underweight child for fully and partially dependent couples on tea garden for their livelihood is 29 and 12 percent, and 49 and 23 percent respectively.

Further, the percentage gap in case of a composite index of anthropometric failure[9] (CIAF) is 25 percent. Those couples who are fully dependent on tea garden has 54

[9] Composite Index of Anthropometric Failure: Composite Index of Anthropocentric Failure (CIAF) is developed by economist Peter Svedberg which incorporates all undernourished children i.e. wasted, stunted and underweight as one variable. The child suffering from any of these under-nutrition indicators is considered to be as undernourished.

percent CIAF child as against 39 percent for those who are partially dependent on tea garden for their livelihood.

Fig.4.6 Nutritional Status of Children by Occupational Combination of the Parents



Source: Computed from field survey data

4.5 Background Characteristics of Couples Fully and Partially Dependent on Tea Gardens by Anthropometric Failure

The background characteristics of two groups of working couples by overall undernourished child i.e. Composite Index of Anthropometric Failure (CIAF) indicates that mother's education, father's education, sex of the child, standard of living and exposure to mass media are related to the nutritional status of a child (Table 4.2). In the case of fully dependent couples, it was observed that both mother and father with below primary level of education have higher percentage of an undernourished child compared to those who have attained above primary level education. A similar pattern has been observed in the case of a partially depended group of couples. These relationships are statistically significant at 0.01 level, except for husband education in the partially dependent group which is significant at 0.05 level. Further, in the case of partially dependent group 45 percent of female child is undernourished compared to 35 percent of male child. Standard of living index and exposure to mass media are also related to the nutritional status of a child. In the case of partially dependent group, only 19 percent of child who belongs to the high living standard are undernourished as oppose to 47 percent for those who belong to low living standard.

Table 4.2 Nutritional Status of Children by Background Characteristics of Parent's Occupational Combination

Background Characteristics	Partially dependent on Tea Garden		Fully dependent on Tea Garden		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
(Women education) Below primary	34	53	85	79.4	119	69.6
Above primary	46	32.9	40	44.9	86	37.6
Pearson's Chi-square Test	**7.569 (.006)*** **		**25.026 (.000)*** **		**40.214 (.000)*** **	
(Father's education) Below primary	17	54.8	73	81.1	90	74.4
Above primary	63	36.4	52	49.1	115	41.2
Pearson's Chi-square Test	**3.743 (.053)** **		**21.648 (.000)*** **		**37.148 (.000)*** **	
(Sex of the child) Male	35	33.7	69	65.1	104	49.5
Female	45	45.0	56	62.2	101	53.2
Pearson's Chi-square Test	**2.753 (.097)***		**.174 (.677)**		**.527 (.468)**	
(Age of the child) 12-23 months	17	32.1	23	53.5	42	43.3
24-35 months	15	33.3	29	58.0	42	44.7
36-47 months	23	45.1	37	71.2	60	58.3
48-60 months	25	45.5	36	70.6	48	56.5
Pearson's Chi-square Test	**3.425 (.331)**		**4.942 (.176)**		**7.981 (.092)***	
(Standard of living)Low	9	47.4	44	78.6	53	70.7
Medium	60	46.9	76	64.4	136	55.3
High	11	19.3	5	22.7	16	20.3
Pearson's Chi-square Test	**13.166 (.001)*** **		**21.373 (.000)*** **		**43.300 (.000)*** **	
(Exposed to mass media) Low	16	59.3	46	80.7	62	73.8
High	64	36.2	79	56.8	143	45.3
Total	80	39.2	125	63.8	205	51.2
Pearson's Chi-square Test	**5.245 (.033)** **		**9.967 (.002)*** **		**21.659 (.000)*** **	
(Type of tea garden ownership) Public	79	66.9	42	40.8	121	54.8
Private	46	59	62.4	37.6	84	46.9
Pearson's Chi-square Test	**1.293 (.256)**		**.213 (.645)**		**2.423 (.120)**	
(Income) very low	17	77.3	61	81.3	78	80.4
Low	18	58.1	55	71.4	73	67.6
Medium	33	45.8	8	34.8	41	43.2
High	12	15.2	1	4.8	13	13
Pearson's Chi-square Test	**51.98(000)*** **		**38.44 (000)*** **		**105.612 (.000)*** **	
Total	**80**	**39.2**	**125**	**63.8**	**205**	**51.2**

Source: Computed from field survey data

In the case of fully dependent group, the variation in the percentage of child undernourishment is large with 23 percent for those who belong to a high standard of living and 79 for those who belong to low standard of living. Exposure to mass media shows that those women who are not exposed to mass media have a higher percentage of an undernourished child with 59 percent for partially dependent group and 80 percent for fully dependent group as contrast to 36 percent and 56 percent for partially and fully dependent couple who are exposed to mass media. These relationships are significant at 0.01 level for fully dependent couples and .05 level for partially dependent couples on tea garden for livelihood.

4.6 Possible Work Combination among Couples

The work groups which are broadly clubbed into two groups i.e. partially and fully dependent on tea garden for livelihood in the previous section can further be segregated into six work combination (Table 4.3) on the basis of work type. The first group i.e. fully dependent on tea garden for livelihood- means couples whose source of income is only from tea garden has further been classified into two subgroups. First, is wife not working but husband working in the tea garden, and second both husband and wife working in the tea garden. Further, the second group i.e. partially dependent on tea garden which means one from the couple works out of tea garden is divided into four sub-groups. The first is husband working in tea garden but wife working out of tea garden; the second wife working in tea garden but husband working in the low-income job; third wife working in tea garden but husband working in better jobs; and fourth wife working in tea garden but husband employed in government jobs.

The percentage distribution of couples by type of possible work combination is shown in Table 4.3. It is observed that out of total sample from the tea gardens of Darjeeling, little more than one-forth are those where the wife is not working, but husband is working in the tea garden. The percentage of couples where both are employed in tea garden is 23 percent. Only 4 percent are the couples where husband work in tea garden and wife work out of tea garden. Further, 11.5 percent couples are those where husband is employed in low-income jobs and wife in the tea garden. Similarly, it was also observed that out of total couples, 21 percent are those whose husband is employed in better-paid jobs and wife in the tea garden. Finally, 15 percent couples

are those where wife is employed in tea garden and husband employed in government sector job.

- **Partially dependent on tea garden for livelihood- having more than one source of livelihood or it can be said that one from couple working out of tea garden.**
- **Fully dependent on tea garden for livelihood- only one source of livelihood i.e. tea garden. Couples income only from tea garden.**

Table 4.3 Percentage Distribution of Couples Work Combination in Tea Gardens of Darjeeling

OCCUPATIONAL COMBINATION	FREQUENCY	PERCENT
1. Both working in TG	91	22.7
2. Women not working but husband working in TG	105	26.3
3. Husband working in TG but wife working out of TG	17	4.3
4. Husband in lower job, women in TG	46	11.5
5. Husband in higher job, women in TG	83	20.7
6. Husband in govt. job women in TG	58	14.5
Total	400	100.0

TG – Tea Gardens
Source: Computed from field survey data

Considering the samples size in each sub-category of the occupational combination, the third and fourth subgroups are clubbed together to form one group, and fifth and sixth another (Table 4.4). Thus the new subgroups within groups of occupational combinations i.e. fully and partially dependent on tea gardens are as follows:

In the partially dependent category, by lower job, it means dwellers engaged in economic activities such as agricultural labourer, carpenter, mason, painter, tailor, Anganwadi workers, etc. In higher jobs, it includes the dwellers engaged in better income jobs like contractor, business as well as the government job such as army, police, Jharkhand police, civic police, village police, government teacher, etc.

Table No. 4.4 Percentage Distribution of Couple's Work Combination in Tea Gardens of Darjeeling

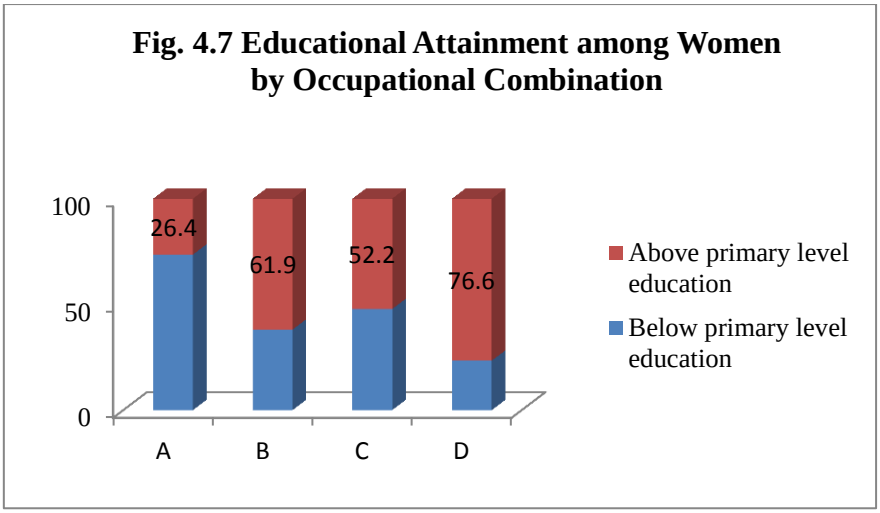
CATEGORY	OCCUPATIONAL COMBINATION	FREQUENCY	PERCENT
A. FULLY DEPENDENT ON TEA GARDEN FOR LIVELIHOOD			
1	Both the couple working in TG	91	22.7
2	One not working and other working in TG	105	26.3
B. PARTIALLY DEPENDENT ON TEA GARDENS FOR LIVELIHOOD			
3	One from Couple working in tea garden and other in lower job	63	15.8
4	One from Couple working in tea garden and other in higher jobs	141	35.2
	Total	400	100.0

Source: Computed from field survey data

Keeping in mind the better understanding of the variation in the nutritional status of children in the tea gardens of Darjeeling an attempt has also been made to explore the background characteristics of tea garden couples by four identified occupational combination. For easy understanding and interpretation of different types of occupational combination, alphabetical codes are given. The interpretation and analysis follow the following codes.

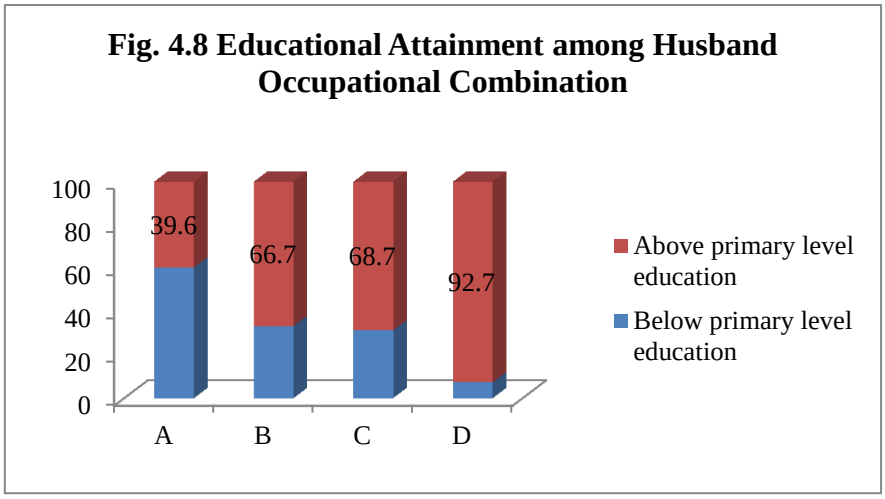
- **Group A- Both husband and wife are working in tea garden**
- **Group B- One not working and other working in tea garden**
- **Group C- One working in tea garden and other working in lower jobs**
- **Group D-One working in tea garden and other working in higher income job**

Fig 4.7 indicates that the percentage of women above primary level education is highest i.e. 74 percent among couples where one is working in the tea garden and other is engaged in higher income job. The lowest level of education is observed among couples where both are working in tea garden i.e. 27 percent (Group A). Further, it is also very interesting to note that the percentage of women above primary level education is higher among couples where only one is working in Tea Garden (i.e. 62 percent) than the couples where one is working in the tea garden and other is engaged in the lower job (i.e. 52 percent).



Source: Computed from field survey data

The almost similar pattern has been observed in the case of husband's education by occupational combination (Fig 4.8). 92 percent of husbands from couples where one is working in the tea garden and other working in the higher job (Group D) have attended above primary level education followed by the couple where only one is working in tea garden and the other is in lower jobs (Group C). The lowest level of education is observed among the couples where both are working in the tea garden i.e. 60 percent below primary level education.

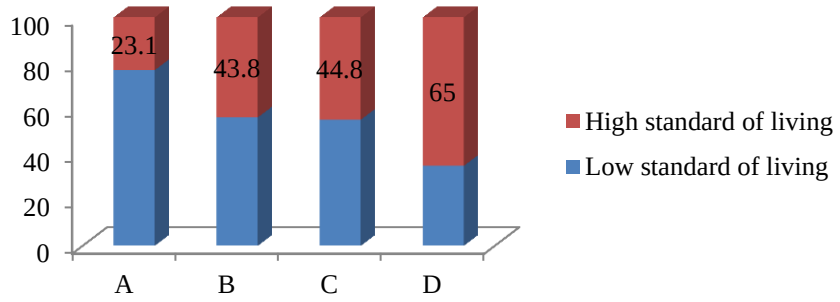


Source: Computed from field survey data

The standard of living index by types of occupational combination (Fig 4.9) indicates that couples, where both are working in tea gardens, have a lower living standard. Almost three-fourth couples under this category have a low living standard. The percentage of the high level of living standard is higher among couples when one is working in the tea garden and other working in higher jobs (i.e. 65 percent). This is

mainly because any individual working in higher job generates higher income leading to higher living standard.

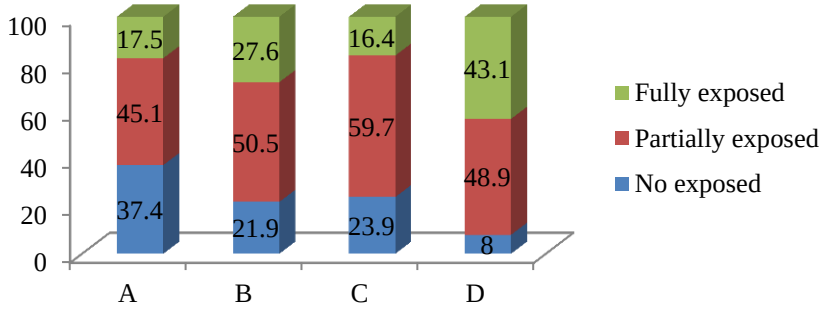
Fig 4.9 Standard of Living Index by Occupational Combination



Source: Computed from field survey data

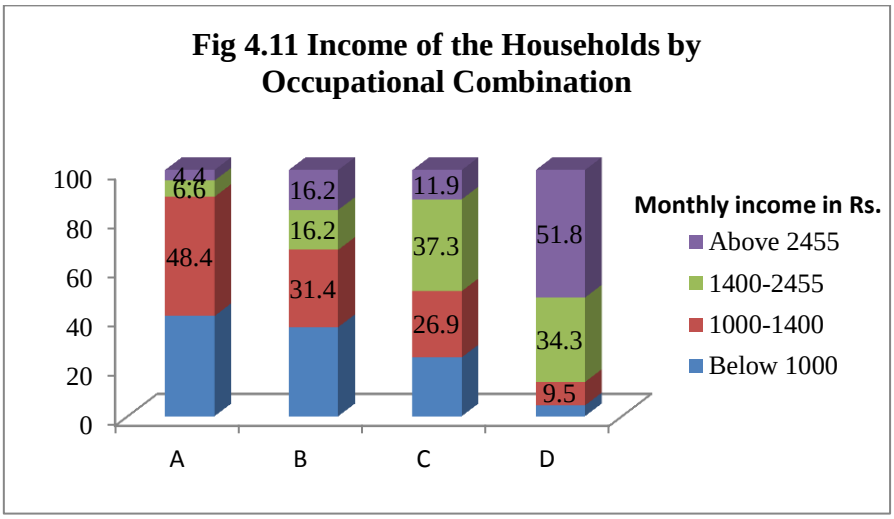
Similarly, the exposure to mass media by occupational combination (Fig 4.10) indicates that the couples where one partner is working in the tea garden and other in higher jobs are mostly exposed to mass media. About 43 percent of couples in group D combination are fully exposed to mass media. Whereas, couple with both working in tea garden (Group A) has larger percent not exposed to mass media. Further, it is interesting to note that the percentage of exposure to mass media is higher among couples if one from the couple is working out of tea garden. This could be due to the fact that any work outside the tea garden enhances not only income but also exposure and interaction.

Fig 4.10 Exposure to Mass Media by Occupational Combination



Source: Computed from field survey data

In the case of income of the household by type of occupational combination, an apparent increase in the percentage of household income is observed with the improvement in the occupation of a couple (Fig 4.11).



Source: Computed from field survey data

The large percentage of couple in group A combination where both husband and wife are employed in tea garden has Rs. 1000-1400 income whereas, in case of Group B combination, a large percentage of couples (i.e. 36 percent) falls in an income category below Rs. 1000 but the percentage figure is lower than the group A combination (i.e. 41 percent) by 5 percent. A Large percentage of couples in group C (i.e. 37 percent) falls under income category of Rs. 1400-2455 whereas under Group D large percentage of occupational combination (i.e. 52 percent) falls under income category of Rs. 2455 and above.

Looking at the average household income by the type of couple's occupational combination (Table 4.5) it was observed that Group A (both husband and wife working in tea garden) has a lowest income i.e. Rs. 1180 followed by Group B with Rs. 1582 where only one from the couple is working in the tea garden. It is interesting to note that the average income of Group B is higher than the average income of Group A where both husband and wife are working. This could be due to the fact that in Group B combination where only one from the couple work in Tea Garden has more working member in the family as 65 percent of total household in this category support joint family as against 49 percent in case of Group A combination. In Group C combination where one working in the tea garden and other in the lower job has an average income of Rs. 1692. The highest average income is observed among group D

i.e. Rs. 3284 where one from the couple is working in the tea garden and other employed in a higher job.

Table 4.5 Average Income of the Households by Type of Couple's Occupational Combination				
Group	**A**	**B**	**C**	**D**
N	91	105	67	137
Mean	1179.8	1581.5	1692.8	3284.9
Std. Deviation	583.8	1274.3	131.6	171.4
Minimum	590.0	375.0	390	650
Maximum	4640.0	6450.0	6250	8983.3

Source: Computed from field survey data

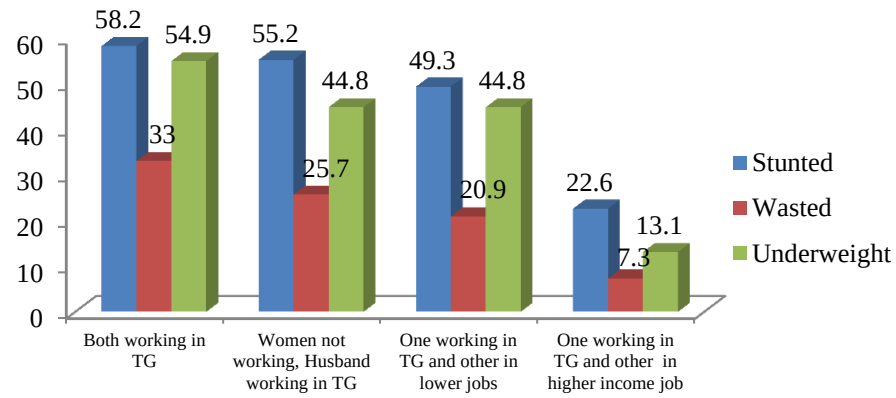
The findings indicate that among all the occupational combination the worst condition is among those who are fully dependent on tea garden for their livelihood and it is, even more worst among those couples where both husband and wife are working in the tea garden. This clearly answers the above section's queries regarding the provision of better livelihood by the tea garden employers to their employees. It indicates that the facilities provided by the tea garden authority are not adequate, be it fully dependent or partially dependent couples. Couples fully dependent on tea garden are the poorest section people and are severely affected. Those who have been able to find an alternative source of livelihood, their condition are much better, but the question regarding the type and level of absorption of tea gardens dwellers in better economic activities arises. It was observed that the absorption of tea garden people in higher economic activities is very low which is quite acceptable as the level of higher education is very low with no professional courses. As a result of which most of the tea garden dwellers end up working in the low-level jobs. Looking at the type of occupation especially the better ones it is very disenchanted to notice that most of them are involved in armed force i.e. Army, Home-guard, Civic Police, Jharkhand Police, that too in lower ranks.

4.7 Nutritional Status of Children by Work Combination

Exploring the nutritional status of a child by type of occupational combination (Fig. 4.12), it is observed that among all the occupational combinations the percentage of a stunted, wasted and underweight child is highest among those couples where both are working in the tea garden. It is also interesting to note that compared to the couples where both the partners are working in the tea garden the percentage figure of child

undernutrition is comparatively lower among couples where only one from the couple is working in the tea garden. The couples where both are working in the tea garden, the percentage of stunted, wasted and underweight child are 58 percent, 33 percent, and 55 percent respectively. Whereas in the case of couples where the wife is not working and husband working in tea garden the percentages are 55 percent, 26 percent, and 49 percent respectively. One from the couple working in the tea garden and other working in lower income jobs also has a high percentage of stunted, wasted and underweight children with 49 percent, 20 percent, and 45 percent respectively. However, the percentage of stunted, wasted and underweight children is lower among couples where one from the couple is working in the tea garden and other working in a better job. Their level of under-nutrition is even lower than the state average of 23 percent, 7 percent, and 13 percent stunted, wasted and underweight respectively.

Fig 4.12 Nutritional Status of Children by Couple's Occupational Combination in Tea Gardens of Darjeeling



Source: Computed from field survey data

The analysis clearly reveals that compared to the couples who are fully dependent only in tea garden for their livelihood, the nutritional status of children is better for couples who are partially dependent. It indicates that if the source of income in the household is from an economic activity out of a tea garden, then the nutritional status of a child is better. This is mainly because any economic activity out of tea garden has higher income which may result in an increase in the tendency to spend more money on nutritional food, warm clothing, medicine and health care services which directly impact child health outcome (Barrett and Browne, 1996).

This finding throws light and suspects the validation of tea gardens authority providing better livelihood and facilities to the people residing in tea gardens. The tendency in the absorption of work in an economic activity out of tea garden is increasing. Further, it also discloses the motive of the Tea Garden owners who are more interested in increasing capital at the cost of the health of tea garden dwellers.

4.8 Findings

The above analysis has already shown that compared to the couples fully dependent on tea gardens for livelihood, the couples partially dependent have better child's nutritional status. To know cause and effect relation, regression analysis has been carried out. Regression from three separate categories, first including all the couples, second the couples who are fully dependent on tea gardens, and third the couples partially dependent on tea gardens for their livelihood has been made in order to know "*how the nutritional status of a child varies by source of livelihood or by type of occupational combination of their parents"*. It also tries to identify how the same factors are operating differently in a different set of categories (i.e. total, partially and fully dependent couples on tea gardens) and to what extent. Its main aim is to find out, if either of the parents is working out of tea garden how it is influencing the nutritional status of the child and how it varies from the one, working only in the tea garden.

Table 4.6 shows the net effect of different factors on the nutritional status of the child taking into consideration all the occupational combination. The results of logistic regression show that child's age, child's sex, religion, family size, father's education, standard of living, income, and any family member taking care of a child emerged as an important predictor of nutritional status of a child. The analysis indicates that with the increase in the child's age the chances of wasted decreases by almost 60 percent to the age group of 36-47 months and 48-60 months which could be due to increase in food intake. The finding is supported by the study conducted by Smith et al. (2013) where older children show a larger increase in food intake with increased portion size than younger children. Sex of the child also holds a significant relation with the nutrition status of the child. Compared to a male child, the chances of a female child to be stunted, wasted and CIAF increases by 92 percent 86 percent and 72 percent respectively. One finding suggests that strong son preference in the childhood, with

families giving boys more food than girls, as the major reason for high malnutrition among girl child compared to a boy (Fledderjohann et al., 2014). The study by Choudhury et al. (2000); Roy (2000); Tigga et al. (2015) also observes similar findings. Religion also shows a significant influence on the nutritional status of a child. Compared to Hindus, a child from Christian family is almost 75 percent less likely to be wasted, underweight and CIAF. This could be due to the differences in the food consumption pattern as Hindu religion doctrine restrict consumption of certain food whereas Christianity does not bind rules relating to food or drink to which Christians are expected to adhere (Adeladza, 2009; Mengesha and Ayele, 2015). Apart from this, it has also been observed during the field survey that some churches provide some basic services to those in need such as food for the poor and free education/scholarship to the students. Family size also has a significant influence on the nutritional status of a child. With the increase in the family size the nutritional status of a child deteriorates. The child in a family with 4 and five members is two times more likely to be stunted, wasted and CIAF that the child in a family with less than four members. Further, child in a family with more than five members is three times more likely to be stunted and CIAF. A similar finding is observed in the study conducted by Rao and Gopalan (1969); Guzman (1978); Horton (1986) indicating that large families are more prone to have an undernourished child. This could be due to poor intra-family food distribution, where an older member of the family usually gets larger share of food in the household. Added to this, with the increase in family size mother get more time to get involved in the other household activities thinking that other member of the household would take care of their child. As a result, very often the child is tended by their older brother or sister with an inability to provide adequate care, or in some cases, they are even left to fend for themselves.

Mother's education is also significantly related to the nutritional status of a child. Compared to illiterate women, the women who have attended above secondary level of education have lower chances of underweight and over all undernutrition by 40 and 44 percent respectively. The studies by Asenso et al. (1997); Kabubo et al. (2008); Omondi and Kirabira (2016) have also discussed the positive influence of mother's education on child nutrition. The positive influence could be due to the better position of educated women to use health services, provide better child health care, have increased knowledge of child rearing, better hygiene practices, and high social status

in the family. Father's education also shows a positive influence on child nutrition. The chance of child to be wasted and overall undernutrition decreases by 61 percent and 49 percent if father has attended middle level of education. The standard of living also shows a significant influence on child nutrition. Compared to the child from low standard of living backgrounds, a child with high standard of living is almost 75 percent less likely to be wasted and underweight. Further, income of the household has a strong bearing on the nutritional status of the child in the tea gardens of Darjeeling. With an increase in the household income, the probability of child being undernourished deceases. The study conducted by Barrett and Browne (1996); Mondal and Sen (2008); Mondal and Sen (2010); Tigga et al. (2015) gave the similar results, indicating that with higher income the level of undernutrition decreases. This finding could be attributed to the fact that with raised income the tendency to spend more money on nutritious food, warm clothing, medicine and health care service increases which directly impact the health outcome. Apart from socio-economic factors, the care provided to a child by any member of the household in the absence of mother also has a significant influence on the nutritional status of a child. The child looked after by grandparents and others in the absences of mother are 50 percent and 71 percent less likely to be undernourished than the child left to fend on his/her own.

Table 4.7 shows the net effect of background characteristics on the nutritional status of a child among couples fully dependent on tea garden for livelihood. It indicates that child's age has a significant influence on the nutritional status of the child. With the increase in the age of the child the chances of child being wasted decrease by 77 percent and 80 percent for child of 36-47 months and child of 47-60 months which is similar to the finding of Amugsi et al. (2013). Sex of the chid also holds a significant relation with child nutrition. Compared to male child, female child is two times more likely to be stunted. Among social groups, it shows that compared to the general caste, the child belonging to OBC is 85 percent less likely to be wasted. However, it has been observed that compared to general caste, the schedule tribe child is six times more likely to be undernourished. Som et al. (2006); Mondal and Sen (2010), Tigga et al. (2015) observed similar finding where tribal children were more affected by under-nutrition as compared to the children belonging to general caste. This could be "due to the fact that tribes in India are the poorest population group that suffer multiple deprivations" (Das and Subba, 2015). Nutritional status by religion also indicates that

compared to Hindus, Christian children have better nutritional status. The chances to be stunted, wasted, underweight, and CIAF are lower by 85 percent, 89 percent, 86 percent and 93 percent respectively.

Further, family size also holds a significant influence on the nutritional status of a child. The child in a family of 6 and above is nine times and eight times more likely to be stunted and CIAF than the child in a family of four and less. Father's education also has a significant influence on all the indicators of nutrition i.e. stunted, wasted, underweight and CIAF. The father who has attained middle-level education and above secondary level education is more than 70 percent less likely to have stunted, wasted, underweight and CIAF child. As expected household income and standard of living also have a significant positive influence on the nutritional status of the child. With the increase in the level of household income, the level of a child to be stunted, wasted, underweight, and CIAF decrease. In the case of standard of living index, the probability of child from higher living standard to be stunted, wasted and underweight decreased by 84 percent, 99 percent, 87 percent respectively. The presence of any family member for child care in the absence of mother also shows a significant influence on the nutritional status of a child. Other family members which include aunt have a strong bearing on the nutritional status of a child. The presences of other members in the household to take care of child decrease the likelihood of child wasted by 82 percent.

It is also important to note that in case of couple fully dependent on tea garden for livelihood, the ownership pattern holds a significant relation with a stunted child. Compared to the public sector tea gardens, a child from private sector is 74 percent less likely to be stunted. The better nutritional status of the child in private sector tea garden is mainly because of an availability of better basic facilities in the tea gardens as compared to public sector tea gardens. The two categories of couples' work combination which were identified in a fully dependent file indicate that compared to the couples where both the couple is working, the chances of child to be stunted is three times more among couples where only one from the couple is working in Tea Garden. This could be because women involvement in economic activity contributes to family income, which may improve child nutritional status.

Unlike table 4.7, table 4.8 shows the undernourished child among couples partially dependent on tea garden for their livelihood. The table indicates that a woman's current age and child's sex have a significant influence on the nutritional status of a child. Compared to the women who are less than 25 years, the likelihood of having undernourished child is 56 percent less among women between 25-30 years but 4 times more among women age above 30. This is mainly because older women are more vulnerable to many complications during pregnancy which may affect foetus resulting long term effect.

It is also important to note that child's sex holds a strong significant influence among couples partially dependent on tea garden for their livelihood at 0.01 level of significance whereas in case of fully dependent file, only stunted child had significant influence at 0.05 level. It was observed that compared to a male child, chances of being stunted and CIAF are three and two times more among female child in fully dependent file. The result is also similar to the findings of Choudhury et al. (2000); Bose et al. (2007); Mondal and Sen (2010); Tigga et al. (2015). This could be attributed due to the biasness towards female child with the increase in the household income resulting from diversified livelihood pattern. Upto a certain point, the consumption of food is almost same irrespective of the child's sex but with the increase in the household income more importance is given to male child be it for child care, dietary practices or other facilities resulting into better health condition of a male child compared to a female child. Further, it is also observed that compared to Hindu child, Buddhist child are 8 times and 3 times more likely to be underweight and CIAF. With the increase in the family size the chances of a child to be undernourished increases by more than 3 times. The analysis also indicates that household income has a significant influence on the nutritional status of the child. With the increase in the level of income the probability of child to be stunted, wasted, underweight and CIAF decrease at .01 level of significance. Child cared by any family member in the absence of mother also has a significant influence on the nutritional status of a child. The child looked after by others in the absence of mother is 98 percent and 94 percent less likely to be underweight and CIAF compared to a child left alone and cared by none.

Table 4.6 Odd Ratio showing Net Effect of Background Characteristics on Nutritional Status of Children				
	Stunted	**Wasted**	**Underweight**	**CIAF**
Background Characteristics	Exp(B)	Exp(B)	Exp(B)	Exp(B)
(Current age) Below 25 years[(r)]				
25-30 years	0.59*	0.78	1.05	0.74
Above 30 years	0.82	0.83	1.087	0.76
(Age of the child) 12-23 months[(r)]				
24-35 months	0.93	0.68	1.164	0.83
36-47 months	1.16	0.38**	0.876	0.93
48-60 months	1.75	0.39**	1.432	1.02
(Sex of the child) Male[(r)]				
Female	1.92**	1.86**	1.45	1.72**
(Religion) Hindu[(r)]				
Buddhist	0.96	0.75	1.18	1.02
Christain	0.43	0.24**	0.24**	0.28**
Others	0.88	0.45	0.72	0.5
(Family Size) Less than 4 [(r)]				
4	2.93**	2.29*	1.38	2.63**
5	2.97**	1.17	1.6	2.10**
More than 5	3.85***	1.61	2.06	3.29***
(Mother's education) Illiterate and primary level[(r)]				
Middle level	0.87	1.32	1.07	0.9
Secondary and above	0.74	1.85	.60***	.56**
(Father's education) Illiterate and primary level[(r)]				
Middle level	0.6	0.39**	0.77	0.51*
Secondary and above	0.8	0.75	0.89	0.67
(Standard of living)Low[(r)]				
Medium	0.77	0.49	0.53	0.9
High	0.38	0.22**	0.273**	0.43
(Income) Poorest[(r)]				
Poor	0.56	0.14***	0.36***	0.51*
Medium	0.20***	0.10***	0.19***	0.24***
Rich	0.05***	0.03***	0.03***	0.05***
Any member to take care of child (No one) [(r)]				
Grand Parents	0.44**	1.14	0.7	0.50**
Siblings	0.38	0.64	1.25	0.86
Others	0.44	0.41	0.29**	0.29**
Cox & Snell R Square	0.32	0.21	0.31	0.33
Nagelkerke R Square	0.43	0.33	0.42	0.43

***Significant at 0.1 level, ** Significant at 0.05 level, ***Significant at 0.01 level;**
(r) Refers to Reference Category
Source: Computed from field survey data
Controlled variables not significant are: caste, exposure to mass media, type of tea garden ownership and occupational combination (See appendix 1).

Table 4.7 Odd Ratio showing Net Effect of Background Characteristics on Nutritional Status of Children among Couples Fully Dependent on Tea Garden for Livelihood				
	Stunted	**Wasted**	**Underweight**	**CIAF**
	Exp(B)	Exp(B)	Exp(B)	Exp(B)
(Age of the child) 12-23 months[(r)]				
24-35 months	0.58	0.63	0.68	0.83
36-47 months	1.34	0.23**	0.64	1.37
48-60 months	2.24	0.20**	1.78	1.58
(Sex of the child) Male[(r)]				
Female	2.43**	1.89	1.62	1.8
(Caste) General[(r)]				
ST	1.73	1.7	2.89	6.15*
SC	0.47	0.61	0.74	0.78
OBC	0.34	0.25*	0.38	0.69
(Religion) Hindu[(r)]				
Buddhist	0.44	0.7	0.41	0.25
Christain	0.15**	0.11**	0.14**	0.07***
Others	0.58	0.39	0.45	0.23
Family Size (Less than 4) [(r)]				
4	9.10***	1.13	1.33	4.96***
5	12.31***	0.38	2.45	6.17**
More than 5	9.55***	0.73	2.72	8.19***
(Father's education) Illiterate and primary level[(r)]				
Middle level	0.0***	0.15***	0.37**	0.18***
Secondary and above	0.25**	0.4	0.32**	0.15***
(Standard of living)Low[(r)]				
Medium	0.59	0.38	0.38*	0.91
High	0.16*	0.01***	0.13**	0.18
(Income) Poorest[(r)]				
Poor	0.77	0.07***	0.30***	0.45
Medium	0.07***	0.04***	0.21**	0.16***
Rich	0	0.02***	0.03***	0.01***
(Exposed to mass media) No[(r)]				
Low	0.66	2.11	1.72	0.8
High	2.09	7.578**	1.84	1.15
(Any member to take care of child) No one[(r)]				
Grand Parents	0.30*	2.46	0.57	0.37
Siblings	0.15**	0.88	0.21*	0.24
Others	0.38	0.7	0.18**	0.2
(Type of TG ownership) Public[(r)]				
Private	0.36**	0.68	0.91	0.56
(Occupational Combination) Both working in Tea Garden[(r)]				
Only Husband working in tea Garden	3.46**	0.68	0.87	1.29
Cox & Snell R Square	0.44	0.39	0.34	0.4
Nagelkerke R Square	0.6	0.48	0.45	0.55

***Significant at 0.1 level, ** Significant at 0.05 level, ***Significant at 0.01 level**

(r) Refers to Reference Category

Source: Computed from field survey data

Controlled variables not significant: mother's current age, and mother's education (See appendix 2)

Table 4.8 Odd Ratio showing Net Effect of Background Characteristics on Nutritional Status of Children among Couples Partially Dependent on Tea Garden for Livelihood				
	Stunted	**Wasted**	**Underweight**	**CIAF**
	Exp(B)	Exp(B)	Exp(B)	Exp(B)
(Current age) Below 25 years[(r)]				
25-30 years	0.44*	0.36	0.6	0.49
Above 30 years	1.49	0.74	4.72**	1.23
(Age of the child) 12-23 months[(r)]				
24-35 months	0.76	0.39	1.09	0.59
36-47 months	0.75	0.38	1.3	0.66
48-60 months	1.02	0.27*	0.93	0.5
(Sex of the child) Male[(r)]				
Female	3.14***	2.11	2.05	2.88**
(Caste) General[(r)]				
ST	1.01	0.46	0.25	0.23**
SC	0.72	0.64	0.25	0.49
OBC	0.56	0.84	0.73	0.39
(Religion) Hindu[(r)]				
Buddhist	1.4	1.68	8.04**	3.39*
Christain	0.89	0.44	0.17	0.72
Others	2.24	0.76	1.39	1.54
(Family Size) Less than 4 [(r)]				
4	2.75	5.24*	1.46	3.33*
5	4.53**	2.76	1.64	3.85*
More than 5	4.84**	1.366	1.7	3.62*
(Father's education) Illiterate and primary level[(r)]				
Middle level	2.32	2.17	5.13	.95*
Secondary and above	4.44	3.85	9.81	3.59
(Income) Poorest[(r)]				
Poor	0.10***	0.22	0.09**	0.16**
Medium	0.09***	0.12**	0.06***	0.16**
Rich	0.02***	0.03**	0.01***	0.03***
(Any member to take care of child) No one [(r)]				
Grand Parents	0.37	0.56	0.87	0.39
Siblings	0.9	0.28	3.47	1.56
Others	0.07**	0.04**	0.02**	0.039***
(Occupational Combination) One working in Tea Garden and other in lower job[(r)]				
One working in Tea garden and other in higher job	0.44*	0.45	0.16***	0.36**
Cox & Snell R Square	0.28	0.16	0.38	0.33
Nagelkerke R Square	0.4	0.31	0.58	0.443

***Significant at 0.1 level, ** Significant at 0.05 level, ***Significant at 0.01 level;**
(r) Refers to Reference Category
Source: Computed from field survey data
Controlled variables not significant: caste, mother's education, standard of living, exposure to mass media and type of tea garden ownership (See appendix 3)

Further, it is also important to note that the chances to have stunted and underweight child is 66 percent and 84 percent less among couples where one is working in the tea garden and other in higher job than the couple where one is working in tea garden, and other is in lower jobs. A similar finding is observed in the case of overall nutritional status where one from couple working in higher job has the better nutritional status than the one engaged in lower jobs which could be due to income factors because couple working in higher job have higher income leading better health care facility.

4.9 Conclusion

The findings clearly indicate that with the diversification of occupation in the tea gardens of Darjeeling the nutritional status of the child improves. If either of the parents is engaged in an economic activity out of tea garden, the nutritional status of a child is better. This is mainly due to the increase in the income of the household with the involvement of couples in an economic activity out of tea gardens. The wage rate in the tea gardens is very minimal, so any work out of tea garden increase the household income, be it in a menial job or better off. But the percentage of workers in the tea gardens area engaged in a better job is very low. Further, it has also been observed that nutritional status of the child does not vary with the type of tea garden ownership pattern when entire sample is considered. However, in the case of couples full dependency on tea garden for livelihood, tea garden ownership pattern holds a significant influence. The nutritional status of a child is better in the tea garden owned by the private sector than public, keeping in mind only among those couples who are fully dependent on tea garden for livelihood. The finding to some extent proves that tea garden owned by private sector provides better facilities and attention to the welfare of the workers than tea gardens owned by the public sector. It is also interesting to note that with the increase in the diversification of economic activities, variation in the child nutritional status by sex is observed. The female child is more prone to be undernourished than male counterpart in partially dependent file. Any member present in the household to care child has a significant influence on the nutritional status of a child but with the increase in the family size the chances of a child to be undernourished increases.

Further, the analysis among couples fully dependent on tea garden for livelihood reveals that compared to child where both husband and wife are working in tea garden the chances of child to be undernourished is higher among couples where only one from the couple is working in the tea garden. This indicates that involvement of women in an economic activity has a significant influence on the nutritional status of a child. The involvement of both husband and wife in an economic activity not only increase the household income but also the decision-making process in providing better dietary and health care facilities. In case of partially dependent couple on tea garden for livelihood, the chances of child to be under nutrition decreases if one from a couples is engaged in higher income job compared to couple where one is engaged in lower job.

Subsequently, the finding concludes that whatever may be the source of livelihood, be it fully dependent or partially dependent on tea garden, the income of the household has a significant bearing on the nutritional status of a child. Thus, the focus should be given to improving or reconsidering the wage rate among tea garden workers. Further, importance of women employment has also been realised in combating child nutrition. More emphasis should also be given to encourage women employment in tea gardens of Darjeeling.

Thus, keeping in mind the importance of women's economic activity on child nutrition the next chapter tries to explore the possible pathways through which mother's activity influences child nutrition.

CHAPTER -5

CHAPTER 5

MOTHER'S WORK AND NUTRITIONAL STATUS OF A CHILD: ISSUES AND LINKAGES

5.1 Introduction

Mother's work plays a crucial role in contributing to the nutritional status of a child, and their linkage may be stronger in tea garden estates where large numbers of women are employed. It is a focused research to understand whether the former has certain impact on the latter. Mother's economic participation is expected to have a positive influence on the family income and thus nutrition of the children. But this straight cut relationship has also been questioned in the context that working woman has less time to care her child and breastfed which might lead to the low nutritional status of the child. Further, the relation between the time for child care and the involvement of women in economic activity has also been questioned. Desai and Jain (1994) have observed that in India, mother time with the child care is not very sensitive to women's involvement in market work. Infact, it is the women with no market work who were responsible for time-consuming domestic chores that left them little time for childcare. Thus, in this context, an attempt has been made to understand the complexities associated with the work status of tea garden women and their influence on the nutritional status of a child. It raises several questions; 1) How women's role as both producers and reproducers has influenced the nutritional status of a child? 2) How is time used by mother in different activity influence the time for child care 3) Is the mother's time for child care important factor or there are other factors that have an important bearing on the nutritional status of a child.

5.2 Condition of Women in Tea Gardens of Darjeeling

The most important feature of tea gardens is, more than half of the workforce constitutes of women because plucking of tea leaves is the exclusive occupation of women. It requires considerable skill and attention on the part of the picker to nip off the leaf bud and top two leaves cleanly with the thumb and index finger of both hands without damaging the young shoots (Hall, 2000). Since soft hands and nimble fingers are requisites for tea leave plucking and picking, women workers dominate the employment scene.

The survey data reveals that out of total surveyed women in tea gardens of Darjeeling 58 percent are working. Looking at the occupational status in tea gardens, one could say that the women enjoy considerable freedom as compared to their male counterpart, but the scenario is not same at the household level. During the survey, it was observed that somehow or other women are always being suppressed and treated as inferior compared to the male counterparts. At their own home, their opinions are not valued. Looking at the decision-making capacity it was revealed, that only 17 percent of tea garden women make a decision on their own regarding the household purchase, daily purchase, health care and visit their relative. Most of the decisions are made by their husband or in-laws. Further, it is usually said that with employment comes empowerment but it has not been observed in this study. Some working women in tea gardens do not have the right to decide on their own earnings. Only 32 percent of working women decide how their earning should be used and the rest is decided either by their husband or their in-laws. When asked about their wages, the majority of women workers were dissatisfied and felt that the continual increase in costs of living has reduced their purchasing power, causing them always to be short of money and in debt. There is no opportunity of promotion for the female workers. None of the surveyed tea gardens had a female supervisor.

The women in tea gardens play the role of income generator, household worker, and a caregiver. They have no time for leisure. Even after the work, females are left to do household works all by themselves while male member relaxes and enjoy themselves. The life of non-working women in tea garden is no better. Their connection with the outside world is very limited. With the low living condition, they are the victims of many circumstances. “Socially they are less exposed, economically hard pressed and hand to mouth, educationally and culturally dwarf which cast gloomy picture on their posterity” (Devi, 2014). Their health is also very deplorable. Most of them suffer from anemia due to poor diet. The table 5.1 shows that out of total sampled women in the tea gardens of Darjeeling 15 percent are underweight and 25 percent are overweight. Further, looking at the BMI of tea garden women by work status it has been observed that compared to non-working, the percentage of underweight is high among working women.

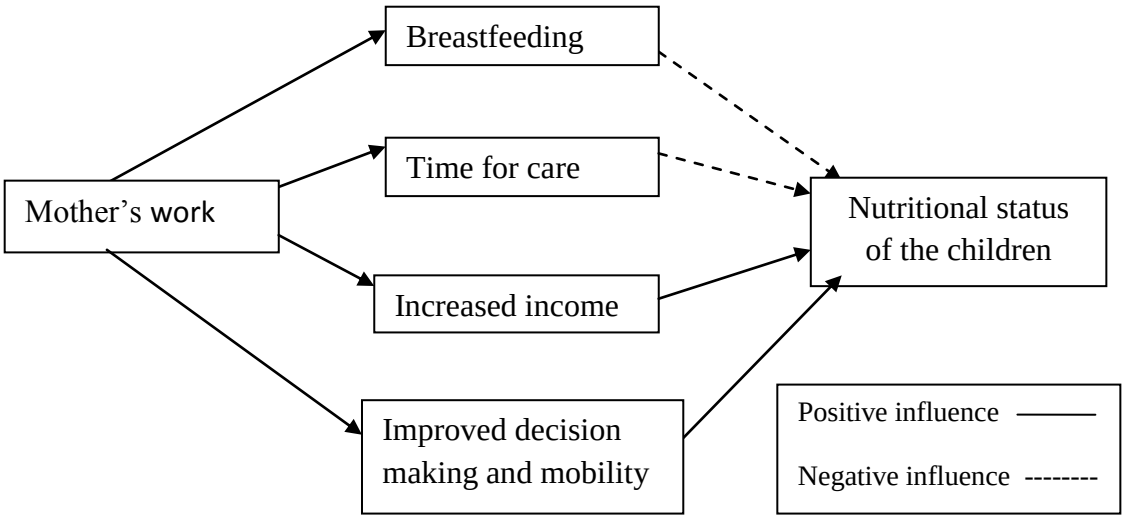
Table 5.1 Distribution of Women by Body Mass Index in Tea Gardens of Darjeeling			
BMI	Total Women (in %)	Working Women (in %)	Non-working Women (in %)
Underweight (Below 18.5)	16	19	9.5
Normal (18.5- 25)	59	51.7	59
Obese (Above 25)	25	29.3	21.4
Pearson's Chi-square Test	**3.269 (.195)**		

Source: Computed from field survey data

5.3 Framework Linking Mother's Work and Child Nutrition

Figure 5.1 depicts possibility of the pathway of the influence of mother's work on the nutrition status of the children. It shows that the mother's work operates in both positive as well as negative way in influencing the nutritional status of a child. Mother's work influences the nutritional status through four intervening factors i.e. Breastfeeding, time of child care, increase in household income and increases in decision making and mobility. The factors i.e. Breastfeeding and time for child care have a negative influence because it is believed that the involvement of mother in the economic activities reduces the duration of breastfeeding and time for childcare. Whereas other two factors show a positive influence because their involvement in economic activity is likely to increase the household income and decision-making capability which might act as a positive factor for the nutritional status of a child.

Fig. 5.1 Model linking Mother's Work and Child Nutrition



The detail of these factors through which mother's work operates in the tea gardens of Darjeeling will be discussed in following sub-topics. An attempt has also been made to show the linkages between these variables and their influence on the nutritional status of a child.

5.4 Women's Work and Autonomy

Since a large percentage of tea garden women are economically active, an attempt has been made to see the influence of their economic involvement in decision making, access to resource and freedom of movement. Table 5.2 reveals that there is no decision for which a majority of women alone are the main decision maker. Of the four decisions they were asked about, women are more likely to make a decision about household and daily purchase by themselves. However, this decision is made by only one-fifth of the women in the tea garden and rest by husband and other family members. Only 14 percent of women make a decision on the health care and only 7 percent make a decision about a visit to their relatives. A joint decision is more common in the case of health care and family visit.

Freedom of movement outside the home which is also an important aspect of women's autonomy has been captured among the tea garden women by framing a question if they were allowed to go to three different places i.e. market, hospital and to places outside village community alone or with someone else. It was observed that most of the women were allowed to go to places outside the home alone. The mobility is slightly lower in case of movement outside village community. Further, information on access to money has also been collected to capture a picture on financial autonomy. It is observed that among tea garden women where most of the women are working and earning, they do not have the right to decide for themselves. Only 17 percent of working women have the right to decide their earning. It is the joint decision between a husband and wife which ranks highest in making decision regarding financial autonomy.

Table 5.2 Women's Autonomy in Tea Gardens of Darjeeling				
Decision-making Autonomy	Respondent (in %)	Husband (in %)	Respondent/ Husband (in %)	Someone else (in %)
Household purchase	16	23	22	39
Daily purchase	16	23	22	39
Health care	14	11	63	12
Visit to relative place	7	10	52	31
Mobility	Alone (in %)	Someone else (in %)		Not at all (in %)
Market	88	12		1
Health facility	88	11		0
Outside village	78	22		0
Financial Autonomy	Percentage			
Respondent	18			
Husband	4			
Respondent/husband	43			
Someone else	2			

Source: Computed from field survey data

Further, looking at the women's autonomy by their work status (Table 5.3) it is observed that women's decision-making autonomy and financial autonomy are related to the work status of a tea garden woman.

Table 5.3 Women's Autonomy by Work Status		
Autonomy	Not Working	Working
Household Decision (No)	97.6	72.4
Yes	2.4	27.6
Pearson's Chi-square Test 10.968 (.001)***		
Mobility (No)	16.7	6.9
Yes	83.3	93.1
Pearson's Chi-square Test 2.375(.123)		
Finance (No)	-	74.1
Yes	-	25.9
Pearson's Chi-square Test 5.783(.016)**		

Source: Computed from field survey data

Compared to non-working women the percentage of working women have a higher percentage of decision-making autonomy with respect to a decision regarding their own health care, making large household purchases, making household purchases for daily household needs, and visiting their family or relatives. The percentage of

household decision-making autonomy for working women is 27.6 as against 2.4 percent for non-working women. Further percentage of women allowed to go places alone is more among working than non-working women by 10 percent.

5.5 Women's Work and Duration of Breastfeeding

Duration of breastfed has always been recognised as an important determinant of nutritional status of a child. It is believed that duration of breastfed varies with the work status of a woman and has been established significant relation in many studies (Popkin and Solon, 1976; Zachariah et al., 1994). Working women are more likely to have a short duration of breastfed than the non-working women which could be more relevant in the context of tea gardens women where large numbers of women are employed. The table 5.4 shows that average duration of breastfeeding among tea garden women was 24 months. But when the duration of breastfed is separated for working and non-working women it was revealed that breastfed duration for working women is higher than the non-working women i.e. 26 months against 21 months which contradict to the findings of many researchers.

Table 5.4 Average Duration of Breast Feeding by Work Status	
Working women	26 months
Non-working women	21 months
Total	24 months

Source: Computed from field survey data

Mother's work status also has a significant relation with exclusive breastfeeding (Table 5.5). The percentage of exclusive breastfeeding is more among working women than non-working women. 40 percent child was exclusively breastfed among working women whereas in the case of non-working women only 20 percent was exclusively breastfed.

Table 5.5 Percentage of Children Exclusively Breastfed by Women's Work Status			
Exclusively breastfed	Not working	Working	Total
Yes	21.4	39.7	42
No	78.6	60.3	58
Pearson's Chi-square Test 3.714 (.042)**			

Source: Computed from field survey data

5.6 Women's Work and Household Income

Looking at the average income of the household by women's work status (Table 5.6) it is revealed that the household with working women has a higher income than the non-working women. The average income of the people of tea gardens of Darjeeling is only Rs. 1993. The condition is worse in households where women are not working. The average income of households with working women is Rs. 2377 per months whereas the average income of households with non-working women is Rs. 1462. Further looking at the level or categories of household income by mother's work status (Table 5.6) it is observed that household with working women has higher percentage in the high-income category whereas, in the case of household with nonworking women, a large number of households fall in the low-income category. The percentage of household decreases with an increase in the income category where women are not working, but it is just reversed in the household when women are working. There is an increase in the percentage of household with an increase in the income level when women in the household are economically active. Thus to a large extend the findings reveal the women in tea gardens of Darjeeling by participating in economic activity are playing an important role as a contributor to the income of the household.

Table 5.6 Household Income by Women's Work Status

Household Income	Non-working	Working
Below 1000	40.5	24.1
1000-1400	33.3	20.7
1400-2455	14.3	24.1
2455 +	11.9	31.0
Pearson's Chi-square Test8.654 (.034)**		
Total (Average household income)	Non-working women (Average household income)	Working women (Average household income)
Rs. 1993	Rs. 1462	Rs. 2377

Source: Computed from field survey data

5.7 Time Utilisation by Tea Garden Women on Daily Basis

In this section, an attempt is made to know the time utilised by tea garden women on a daily basis. For this purpose time use survey has been conducted among tea garden women by asking the respondent to report everything they did during 24 hours period. Using the collected information, it is possible to segregate the time allocated by women in four categories: Leisure, Child care, Household activity and Economic activity.

Table 5.7 presents the average minutes spent on different activity by women in the study area. It is observed that the average minute spent on economic activity is highest. The average time spent by the women of tea garden in economic activities is 6 hours followed by childcare with 5 hours 18 minutes, household work 3 hours 30 minutes and leisure with only 2 hours 28 minutes.

Table 5.7 Average Minutes Spent Per Day on Different Activities by Tea Garden Women with Children Younger than 5

Time used in different activities in 24 hours		Total Women	Working Women	Non-Working Women
Leisure	Mean	148 mins **(2hrs 28 mins)**	134 mins **(2hrs 14 mins)**	167 mins **(2hrs 47 mins)**
	Std. Deviation	42.31	44.0	31.4
Child care	Mean	318 mins **(5hrs 18 mins)**	268 mins **(4hrs 28 mins)**	389 mins **(6hrs 19 mins)**
	Std. Deviation	102.35	69.5	100.5
Household work	Mean	210 mins **(3hrs 30 mins)**	186 mins **(3hrs 6 mins)**	242 mins **(4hrs 2 mins)**
	Std. Deviation	50.91	38.6	48.46
Economic activity	Mean	360 mins **(6 hrs)**	360 mins **(6 hrs)**	0.00
	Std. Deviation	61.44	61.44	0.00

Source: Computed from field survey data

Further, looking at the average minutes spent by Tea Garden women by work status it is observed that working and nonworking women allocate their time differently in different activities. The time spent on all the activities i.e. child care, household activity and leisure is more among non-working mothers than it is among the working

mothers which is quite obvious because the time of working women is divided on their economic activity resulting less time for other activities. However, the amount of time spent by mothers on child care does not vary substantially across employment status: while employed mothers work, on average, six hours per day, they spend with their child only 1 hrs 48 mins minutes less than their non-employed counterpart; in contrast, employed mothers spend, on an average, 4 hrs 28 mins per day on child care, against the 6 hrs 19 mins per day spent by non-employed mothers.

5.7.1 Time Spend on Different Activities by Women on Daily Basis

The frequency distribution of hours spent per day on different activities in a sample (Table 5.8) indicates that only 13 percent of total sample women of tea garden have a leisure time more than three hours, leaving women with less time for themselves. Similarly, in the case of child care, 29 percent spent less than 4 hours, 46 percent 4-6 hours and only 13 percent more than 8 hours. More than 8 hours time spent on child care is mainly among those women whose child age is less than two years which requires a total supervision, be it for care or breastfeeding. Further in household activities, a very large percentage of women, i.e. 61 percent spent more than 3 hours in household activities on a daily basis.

Table 5.8 Frequency Distribution of Hours Spent Per Day in Different Activities by Tea Garden Women with Children Younger than 5

Time used in different activities	Total Women	Non-Working Women	Working Women
	Percent	Percent	Percent
Leisure Less than 3 hours	87.0	83.3	89.0
More than 3 hours	13.0	16.7	10.3
Time for child Less than 4 hours	29.0	9.5	43.1
4-6 hours	46.0	35.7	53.4
6-8 hours	12.0	42.9	1.7
More than 8	13.0	11.9	1.7
Time for household activity Less than 3 hours	39.0	16,0	55.2
More than 3 hours	61.0	83.0	44.8

Source: Computed from field survey data

While looking at the percentage distribution of time among tea garden women by their work status (Table 5.8), it is observed that the large percentage of non-working women compared to working give more time in child care, household activity, and leisure. The time for leisure with more than 3 hours is 17 percent for non-working women as compared to 10 percent for working women. Further, time for child care among working women decreases as the hours spent in economic activity increases. The percentage of women for child care with more than 8 hours is 11 percent for non-working women and 1.7 percent for working women. In the case of non-working women, a large percentage of women in the study area tends to give 6-8 hours of time for child care as against 4-6 hours in case of working women. Similarly, the time for household activity with more than 3 hours is spent largely by non-working women with 83 percent compared to working women with 45 percent.

5.7.2 Maternal Characteristics and Time Use Pattern

The relationship between time used on different activities by women and their possible characteristics is shown in the table 5.9. It is observed that the time given for child care has a strong negative correlation with age of the child and working women but correlation is less significant with the women's age. It indicates that with an increase in the child's age and even with the involvement of mother in economic activity the time for child care decreases. The study conducted by Gershuny and Robinson (1988); Robinson and Godbey (1999); Zick and Bryant (1996); Bianchi (2000) gave similar result indicating that women spend less time for child care if they are employed and have older children. Similarly, time for household activity also has a strong negative correlation with mother's work at 0.01 level of significance and mother's age, at 0.05 level of significance. This could be attributed to the fact that employed women are left with the less amount of time to spend in household activities after their work (Pepin et al., 2015). Their involvement in economic activity also reduces the time available for other activities like child care and leisure. The analysis indicates that the time for leisure has a strong negative correlation at 0.01 level of significance with women's age and working women but has a positive correlation with the improvement of women's education. Unlike many other findings, it is very interesting to note that with an increase in the educational level, mother's leisure time increases. Further, negative correlation between time used for economic activity and women's educational level has been observed. This could be due to the

fact, that the employment, generated in tea gardens is basically a lower ranked job attracting women with low level of education.

Table 5.9 Correlation of Time Spent in Different Activities on Daily Basis with Covariate

Variables	Childcare	Leisure	Household activity	Economic activity
Women Age	-.250*	-.304**	-.199*	.230*
Women Education	.164	.240*	.085	-.207*
Age of Child	-.422**	-.124	-.075	.247*
Sex of Child	-.057	.005	-.056	.040
Income	-.168	.049	-.126	.211*
Working Women	-.580**	-.385**	-.542**	.867**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Computed from field survey data

Further, the analysis also indicates that time used for economic activity has a positive correlation with women's age, child's age and income of the household. With an increase in the mother's age and child's age, the time for economic activity increases which means that older women and women having older children are more economically active than their counterpart in the tea gardens of Darjeeling. However, these older women give less time for child care, have less time for leisure, and spent less time in household activities. Further, positive correlation between time used in economic activity and income of the household has been observed which is quite obvious because involvement in economic activity increases the income of the household. The relation is significant at 0.05 level.

5.7.3 Correlation between Times Used in Different Activities by Women

Time used by women on a daily basis in different activities is inter-related to each other. To know their linkage, correlation has been conducted (Table 5.10). It is interesting to note that leisure and economic activity, childcare and economic activity, and economic and household activity are negatively correlated at 0.01 level of significance. It means that with an increase in time in one variable, the time on another variable decreases. It is quite obvious that if mothers are economically active the time spent on child care, household activity and leisure will be low and so has

been observed in the study area. Similar findings have been observed in the study conducted by Short et al. (2002); Kimmel and Connelly (2007).

Further, it has also been observed (Table 5.10) that leisure and childcare, and childcare and household activity are positively correlated with each other at 0.01 level of significance whereas correlation is less significant between leisure and household activities. The strong positive correlation between leisure and childcare, and childcare and household activity may be due to the possibility of overlapping of activities. The women have reported time spent on child care even when they are not actually caring for their child. Child's presence with the mother during her household activities is often reported as time for both the activities. The study conducted by Offer and Schneider (2011) mentioned that women tend to spend more time in multitasking and the additional hours spend on multitasking are mainly related to time spent on household work and child care. The same has been observed in the case of leisure and childcare. The women taking rest or watching television along with her child has been counted as time for both leisure as well as child care. As a result of overlapping of time between different activities (i.e. leisure with child care, household with child care) more than 24 hours/1440 minutes per day time has been observed. The maximum time reported is 37 hours 18 minutes whereas minimum time is less than 24 hours per day i.e. 1392 minutes (Table 5.11).

Table 5.10 Cross-Equation Correlation between Time Uses

Leisure/childcare	0.492**
Leisure/economic activity	-0.475**
Childcare/economic activity	-0.694**
Leisure/household activity	0.204*
Childcare/household activity	0.483**
Economic activity/household activity	-0.555**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Source: Computed from field survey data

Looking at the level of overlapping of time used in different activities between working and non-working women, variation in time usage has been observed (Table 5.11). The level of overlapping is more in the case of non-working women rather than

working women. The maximum time reported in 1 day is 37 hours 18 minutes for non-working women and 34 hours 18 minutes for working women. The difference of 3 hours between working and non-working women is observed. It is interesting to note that whether it is working or non-working women, very high incidence of overlapping of time has been observed which could be attributed due to the reporting of same time both for child care and household work or child care and leisure.

Table 5.11 Level of Overlapping of Time Used in Different Activities

	Total	Non-working	Working
Mean	1652.42	1631.43	1667.62
Std. Deviation	154.69	187.26	125.62
Minimum	1392 mins **(23hrs 12 mins)**	1416 mins **(23hrs 36 mins)**	1392 mins **(23hrs 12 mins)**
Maximum	2238 mins **(37hrs 18mins)**	2238 mins **(37hrs 18mins)**	2058 mins **(34 hrs 18 mins)**
Overlapping of time	846 mins **(14hrs 6 mins)**	822 mins **(13hrs 42 mins)**	666 mins **(11hrs 6mins)**

Source: Computed from field survey data

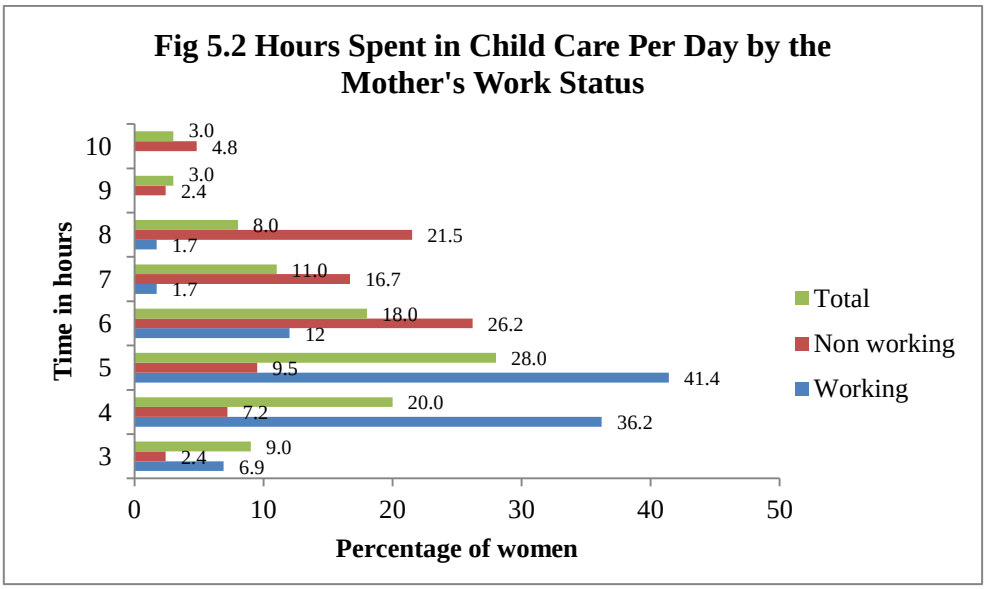
5.8 Time Spent on Child Care

In measuring time spent in child care, the question "How much time did you spend taking care of your child in a day" was asked to the tea garden mothers. This question was asked to mothers having child less than five years in a household. The pattern of data collection is on a daily basis. The time for child care refers to any time spent on the basic needs of children, including breastfeeding, changing diapers, general feeding, bathing, dressing, holding, rocking a child to sleep, watching, and providing medical care and grooming. As women are practicing more time in multi-tasking, it is generally observed during the field survey that the women basically report time for child care if the child is present with them while involved in other activities like cooking or washing clothes or watching television, etc. To some extent, the actual time for child care is being overshadowed by other activities like leisure and household activities.

5.8.1 Frequency Distribution of Hours in Child Care

The frequency distribution of hours spent on child care by tea garden women (Fig 5.2) indicates that a large percentage of women (i.e. 20 percent) spend 4 hours in a day

with their child. However, hours spent up to 11 hours for child care has also been observed in the study area. More hours spent on child care is mainly on a child who is young requiring total supervision by their mother such as feeding, dressing, bathing, etc. The frequency distribution of hours spent in child care by work status depicts a reverse picture between working and non-working women. In the case of non-working women, the percentage of women in child care increases with the increase in an hour and highest percentage of non-working women (i.e. 26 percent) spend 6 hours for child care. Whereas, in the case of working women, the percentage of women involved in child care decreases with increase in time spend on child care. A large percentage of working women i.e. around 40 percent spends 5 hours for child care, and only 1.7 percent spent 8 hours in child care whereas in case of non-working women 21 percent spent the highest 8 hours time for child care and 5 percent spent 10 hours time for child care.



Source: Computed from field survey data

On an average, it is observed (Table 5.12) that 5 hours 18 minutes per day is spent on child care. Further, when the time for child care is segregated among working and non-working women, it is clear that the time spent on nonworking women is 2 hours more than the working women. The theoretical, as well as empirical work reviewed earlier, also concludes that working women spend less time in child care than nonworking women (Short et al., 2002).

However, child care also varies with their age, and it is observed that irrespective of mother's work status the average time spend on child care decreases with increase in the age of the child. The average time spent by mother on child aged 12-24 months is 6 hours 18 minutes which decreases to 5 hours 28 minutes for 24-36 months, 5 hours 23 minutes for 36-48 months and 4 hours 20 minutes for 48-60 months child. Short et al. (2002) also found a strong evidence of decrease in the child care with an increase in the age of a child. This could be attributed to the fact that a younger child requires considerably more care than the older child, who can often dress and feed themselves. A similar pattern of decrease in the average time for a child care with age in months has been observed both in the case of working and non-working tea garden women where the average time spent by non-working women is comparatively more than the working women.

Table 5.12 Average Minutes Spent by Mother on Child Care by Age

AGE IN MONTHS	TOTAL (in minutes)		WORKING (in minutes)		NON WORKING (in minutes)	
	Average	SD	Average	SD	Average	SD
12-24 months	377.76 (6 hrs 18 mins)	125.21	309.00 (5 hrs 9 mins)	116.90	440.76 (7 hrs 20 mins)	99.33
24-36 months	328.25 (5 hrs 28 mins)	91.65	282.00 (4 hrs 42 mins)	57.60	397.33 (6 hrs 37mins)	96.29
36-48 months	323.40 (5hrs 23 mins)	88.89	262.90 (4 hrs 18 mins)	45.52	382.90 (6 hrs 22 mins)	70.66
48-60 months	259.74 (4 hrs 20 mins)	63.21	240.00 (4 hrs)	33.89	308.00 (5 hrs 8mins)	90.99
Total 1-5 year child	318.42 (5 hrs 18mins)	102.35	268.12 (4 hrs 28 mins)	69.50	387.81 (6hrs 17 mins)	100.52

Source: Computed from field survey data

In the tea gardens of Darjeeling where more than 60 percent household belong to joint family, child care is not exclusively the responsibility of the mother. Alternative caregiver plays a major role in reducing mother's burden greatly. Apart from this, the presence of extended family also reduces time spent on household work and child care (Pepin et al., 2015). The presence of more member especially adult members in the household serves as time resource for mothers. So, in this context role of the family in child care has been captured. The question "who takes care of your child in

your absence" was asked to the respondent (i.e. mother of a child). The data reveals (Table 5.13) that on an average there are five members in the households and almost 60 percent household has adult members. The large percentage of children i.e. 41 percent were taken care by their grandmother. Grandmothers are identified as an important caregiver in the tea gardens of Darjeeling which is similar to the findings of Short et.al (2002). Remaining 8 percent are looked after by their grandfather, 7 percent by father, 6 percent by aunt, and 6 percent by elder siblings. It also revealed that out of total sample children one-third were left alone and had no one to take care in the absence of mother.

Table 5.13 Care Giver to the Child in the Absence of Mother	
Grandmother	41.0
Grandfather	8.0
Father	7.0
Aunt	6.0
Elder siblings	6.0
Left alone	32.0

Source: Computed from field survey data

Further, looking at the presence of alternative child caregivers in the absence of mother in a household by work status, no significant relation exists (Table 5.14). However, the percentage of alternative caregivers is more among children's of working women than their counterpart. Around 70 percent children were looked after by someone else in case of working women whereas 64 percent in case of non-working women. A gap of 7 percent in child not cared by anyone else among working and non-working women is observed.

Table 5.14 Care Giver to the Child in the Absence of Mother by Work Status			
	Not working	Working	Total
No one	35.7	29.3	32
Someone else	64.3	70.7	68
Pearson’s Chi-square Test	0.459 (.498)		

Source: Computed from field survey data

5.9 Linkages between Mother's Work and Nutritional Status of Children in Tea Gardens of Darjeeling

This section tries to explore the linkage between mother's work and nutritional status of a child. The pathways through which mother's work influence child nutrition has already been discussed. It examines the nutritional status of a child by mother's work status and its interlinking factors (Table 5.15).

5.15 Nutritional Status of Children and its Linkages with Women's Work Status by its Background Characteristics

	Total	Working	Not working
Exclusive Breastfeeding (No)	52.9	51.4	54.5
Yes	40.6	34.8	55.6
Pearson's Chi-square Test	**1.321(.250)**	**1.555 (.212)**	**003 (.957)**
Time for Childcare (Less than 3 hours)	44.8	44	50
3 - 5 hours	50	48.4	53.3
5 hours and above	52	0	56.5
Pearson's Chi-square Test	**.310(.856)**	**1.791 (.408)**	**.078 (.962)**
Mother Leisure time (less than 3 hours)	52.9	46.2	62.9
More than 3 hours	23 .1	33.3	14.3
Pearson's Chi-square Test	**4.018(.045)****	**.357 (.681)**	**5.555 (.018)****
Adult member present in household (Yes)	44.8	36.7	53.6
No	54.8	53.6	57.1
Pearson's Chi-square Test	**.962(.418)**	**1.673 (.196)**	**.048 (.826)**
Household Income (Poorest)	77.4	92.9	64.7
Poor	61.5	50	71.4
Middle	25	28.6	16.7
Rich	17.4	16.7	20
Pearson's Chi-square Test	**25.460(.000)*****	**20.455 (000)*****	**8.202 (.042)****
Autonomy (No)	63.6	50	71.4
Yes	47.2	44.4	51.4
Pearson's Chi-square Test	**1.060 (.303)**	**.046 (.829)**	**.942 (.332)**
Women work Status (Working)	44.8		
Not working	54.8		
Pearson's Chi-square Test	**.962(.418)**		
Work (kind cash)		45.5	
Cash		44	
Pearson's Chi-square Test		**.012 (.912)**	

Source: Computed from field survey data

The analysis indicates that nutritional status of a child is low if the child is exclusively breastfed whereas it is just reversed in the case of non-working women where percentage of under nutrition is slightly higher among child exclusively breastfed than the child of working women. It is also very surprising to note that with the increase in the mother's time for child care the percentage figure of undernourished child increases. This could be due to the fact that undernourished child is given more time to care by mothers, but the relation is not significant in the study area. However, in the case of mother time for leisure, it is observed that with the increases in the mother's time for leisure the percentage of child undernutrition decrease. The time for leisure is basically time of mother in regaining her energy, so if the time for leisure is more among women, she can give more energy for child care leading better nutritional status of a child. The relation is significant at 0.05 level. The percentage of undernourished child is 53 percent if mother has less than 3 hours leisure time and 23 percent if she has more than 3 hours. The relation is significantly related at 0.05 level.

The presence of an adult member in the household does not show much difference in the nutritional status of a child. However, among working women, the household with an adult member has lower percentage of undernourished child i.e. 37 percent as against 57 percent among non-working women. Further, it has also been observed that the percentage of under-nutrition decreases with the increase in the level of household income. The percentage of undernourished child is 77 among poorest household income and only 17 percent among rich household income. The relation is significant at 0.01 level. But no significant relation between mother's autonomy and nutritional status of child exist. Further, it is also interesting to note that though the relation between work status and child nutrition does not hold any significance, the percentage figure of under-nutrition is high among nonworking women i.e. 55 percent compared to working women i.e. 45 percent.

5.10 Findings

Many factors are associated with the nutritional status of the child and have been discussed in detail in the previous chapter but this chapter keeps into consideration the economic role of women in tea gardens; it tries to explore the pathway through with mother work influence child nutrition. Thus in order to know the net effect of mother's work on the nutritional status of a child multivariate logistic technique has

been applied. Separate regressions for three categories i.e. total women, working women, and non-working women have been presented in Table 5.16. The variables considered are exclusive breastfeeding, time for child care, adult member present in the household, household income, mother leisure time, mother's work status and autonomy. The binary dependent variable *Child Nutritional Status (*CIAF) is recoded into a dummy with one as undernourished and 0 as normal.

In the first regression (Table 5.16), which includes all the women of tea gardens of Darjeeling, it is observed that the time for child care, income of the household and mother's time for leisure has a significant influence on the nutritional status of a child. It is observed that with an increase in the time for child care the chances of the child to be undernourished increases. This could be due to the fact that undernourished child is given more time for care or it could be due to the overlapping of time reported by the respondent because when the question of child care is asked among women, there are more chances of overlapping time for childcare and time for household chores together. The women engaged in household activity along with her child counts time for both the activities and thus the time which has been counted for child care is not actually or solely given for child care. Hence the probability of undernourished child is more among those women who have reported more time for child care. The findings are supported by the study conducted by Offer and Schneider (2011), where they mentioned that women tend to spend more time in multitasking and the additional hours spend on multitasking are mainly related to time spend on household work and child care. However, the likelihood of a child to be undernourished decreases with an increase in mother's time for leisure. Compared to the child whose mother has less than 3 hours for leisure, the likelihood to be under nourished decreases by 83 percent for the child with a mother whose leisure time is more than 3 hours. This clearly indicates that if the mother has time for herself, then she takes care of her child more appropriately because she has more energy to take care of her child when the time for leisure is more. Further, with the increase in the household income the nutritional status of a child gets better. It is significant at 0.01 level. Compared to child of poorest household, the child of rich household is 75 percent less likely to be undernourished. Similar findings are observed in the study conducted by Mondal and Sen (2010); Tigga et al. (2015) where income act as a strong positive predictor of child nutritional status. This is mainly because low-

income households can not feed children with micronutrient food such as, animal product, fruits, and vegetables which are invariably more expensive than staple food items. Apart from this, income constrain household not only for the balanced diet but also for adequate housing, sanitation, and water supply which indirectly influence the nutritional status of a child (Svedberg, 2008). However, mother's work status doesn't hold significant relation with the nutritional status of a child.

Table 5.16 Odd Ratio showing Net Effect of Mother's Work Status on Nutritional Status of a Child

Background Characteristics	Total	Working	Non-working
	Exp(B)	Exp(B)	Exp(B)
Exclusive Breastfeeding No [(r)]			
Yes	1.086	1.164	.517
Time for Childcare Less than 3 hours [(r)]			
3 - 5 hours	3.745**	4.855	1.571
5 hours and above	3.012	0.000	2.819
Adult member present in household Yes [(r)]			
No	1.261	0.861	0.791
Mother Leisure time less than 3 hours [(r)]			
More than 3 hours	0.170**	1.343	0.057**
Household Income Poorest [(r)]			
Poor	0.364	0.068**	0.956
Middle	0.067***	0.016***	0.031**
Rich	0.025***	0.006***	0.084*
Autonomy No [(r)]			
Yes	0.349	1.531	0.181
Women work Status Working [(r)]			
Not working	2.284		
Type of Work Cash and Kind [(r)]		0.711	
Cash		6.485	
-2 Log likelihood	102.505	39.684	51.384
Cox & Snell R Square	0.303	0.351	0.387
Nagelkerke R Square	0.404	0.469	0.518

***0.1 % Level of Significance, **0.05 % Level of Significance, *** 0.01 % Level of Significance**

[(r)] Reference category

Source: Computed from field survey data

The regression separately for working and non-working women have also been analysed in this section (Table 5.16). In the case of working women, it is observed that only income of the household has significant influence on the nutritional status of a child. It is significant at 0.01 level. Whereas in case of non-working women category, it is observed that along with household income, time for leisure also has a significant influence on the nutritional status of a child. Compared to the poorest household, the household of middle and rich categories are 73 percent and 78 percent less likely to have an undernourished child. The most important finding that emerged from the analysis is the mother's leisure time. It is very interesting to note that unlike working women, non-working women with more leisure time emerged to be contributing factors in improving the nutritional status of a child. Compared to a mother having less than 3 hours leisure time, a mother with more than 3 hours leisure time are 95 percent less likely to have an undernourished child and it's significant at 0.05 level.

5.11 Conclusion

The chapter reveals that in the tea gardens of Darjeeling where more than 50 percent women are economically active plays an important role in contributing nutritional status of a child. The findings to some extent have managed to explain some of the doubt that emerged during the early stage of research. The finding concludes that women in the tea gardens of Darjeeling are the major contributors to the household income. Their participation in an economic activity has helped in raising the income of the household which emerged to have a significant positive influence on the nutritional status of the child. Further, it is also interesting to note that time for child care which is believed to have a significant influence on the nutritional status of a child doesn't hold any significance in tea gardens. Rather it is the raised income of the household with the participation of women in the economic activity that has a significant positive influence on the nutritional status of a child. It is also important to note that among non-working women, it is the time for leisure which is more important. Mother with more leisure time act more effectively than the time for child care because the time for child care always overlaps with other activities when asked to a respondent. It can be said that women having more time for themselves rather than getting involved in a household activity or spending time with family, can actually provide better care for child. Thus in order to improve the nutritional status of

a child among non-working women, better household income with more time for leisure seems to act as stimuli. However, in the case of working women, it is necessary to note that time for leisure does not hold any significant influence rather it is their raised household income through their economic participation which holds a significant influence.

Apart from socio-demographic and economic factors, programmatic factors also influence the health outcome of a particular region. The effective implementation of health programme can also improve the nutritional status of a child. Thus keeping this point into consideration, the next chapter attempts to explore the implementation and effectiveness of health programmes in improving the nutritional status of a child.

CHAPTER -6

CHAPTER 6

CHILD HEALTH CARE PROGRAMMES, ITS IMPLEMENTION AND EFFECTIVENESS IN TEA GARDENS OF DARJEELING

6.1 Introduction

The Government of India is making concerted efforts to reduce malnutrition in the country. Ministry of Women and Child Development is implementing various schemes for welfare, development and protection of children. This chapter makes an attempt to overview some of the health programmes related to the improvement in child nutrition in the tea gardens of Darjeeling. An attempt has also been made to look at the implementation of programmes and its effectiveness in reducing malnutrition.

Since the inception of the "Five Year Plan," the problem of malnutrition in India has been recognised. The numbers of international agencies such as WHO, UNICEF, FAO, CARE are assisting the government to implement various schemes to improve nutrition of the people with special emphasis on mother and children. During First and Second Five Year Plan, health, nutrition, and education were identified as major areas of concern with regard to children. More emphasis was given to increase in food production and supplementary nutrition. In the Third Five Year Plan, "children were recognised as a human being with special needs and special efforts were made to coordinate between sectors to ensure these needs" (Child Protection and Child Right in the Five Year Plan, 1996). Applied Nutrition Programmes (1962) and the Mid-Day Meal Programme (1962) were set up. During the fourth five-year plan, major child policies came into existence; the Special Nutrition Programmes (1970), Balwadi Nutrition Programme (1970-71), Prophylaxis Scheme against Blindness due to Vitamin A Deficiency among Children and the Integrated Child Development Scheme (1975) were started. During Sixth and Seventh Five-year Plans, steps were taken to convert the SNP centers on the patterns of ICDS scheme by strengthening them with other inputs like health, sanitation, hygiene, water supply and education. The Universal Immunisation Programme (1985) and the Wheat Base Nutrition Programme (1986) were also launched during this period. The Wheat Base Nutrition Programme was initiated to enlarge the Nutritional Programme by providing nutritious and energy food to children and expectant/lactating women from disadvantaged sections. During Eighth Five Year Plan, National Nutrition Policy (1993) was adopted by the

government under the aegis of the Department of Women and Child Development. It recommended the multi-sectoral strategy for eradicating malnutrition and achieving optimum nutrition for all. The policy also includes the Food and Nutrition Board, which develops posters, audio jingles and video spots for circulating correct facts about breastfeeding and complementing feeding. In the Tenth Five-Year Plan, Infant and Young Child Nutrition Policy along with guidelines regarding feeding practices were introduced. The guidelines include "initiation of breastfeeding immediately after birth, exclusive breastfeeding for the first six months, appropriate complementary feeding from six months of age while continuing breastfeeding, and continued breastfeeding up to the age of two years or beyond." During eleventh five-year plan, ICDS services were further expanded with major concern about infrastructure, training of workers, quality of services and many others.

Recently, in 2013 the most important policy i.e. National Policy for Children has been adopted by the government which reaffirms commitment to inclusive development and protection of all children and declares them to be a "unique and supremely important asset." In 2015 world's largest nutrition education program (IAP Health Phone Programme) was launched in India. Under this programme, 23 million women will be educated by 2018 on better nutrition practices and the prevention of child malnutrition via mobile phones. The objective of this nationwide campaign against malnutrition is to address issues related to the status of women, the care of pregnant mothers as well as children under two, their breastfeeding and the importance of balanced nutrition and health (MWCD, 2015). Further in 2016, the National Plan of Action for Children succeeded the Plan Action adopted in 2005. In alignment with the NPC 2013, National Plan of Action for Children affirms the State's responsibility to provide priority to areas like "survival, health, and nutrition; education and development; protection and participation for all children in its territory and jurisdiction before, during and after birth, and throughout the period of their growth and development, up to the age of 18 years" (MWCD, 2016).

Currently, major child health care programmes with a focus on nutrition are Integrated Child Development Service, National Nutritional Policy, Infant and Young Child Nutrition Policy 2003, National Guidelines on Infants and Young Child Feeding, and Universal Immunisation Programme. Besides these, there are also

several other supplementary programmes implemented in the country by the government. However, for the purpose of this study in tea gardens of Darjeeling few programmes with more focus on ICDS will be discussed.

6.2 National Guidelines on Infant and Young Child Feeding

"Infant and Young Child Feeding (IYCF) practices are simply a set of recommendations to achieve appropriate and adequate feeding of newborn and children under two years of age" (Ministry of Health and Family Welfare, GoI, 2013). As recommended by the National Guidelines (2006), "the IYCF practices include the practices of initiating breastfeeding within one hour of birth, exclusive breastfeeding up to first six months of life, initiation of appropriate and adequate complementary food from the age of 6 months and continued breastfeeding for two years or beyond." This programme guide has been written to provide guidance on the IYCF interventions to the ongoing maternal, infant and child health activities under the NRHM.

The previous chapters clearly highlighted the low nutritional status of children in the tea gardens of Darjeeling. A Large percentage of children in the tea gardens are undernourished. The initiation of malnutrition occurs in the early stage of growth, and the prevalence increases rapidly from birth to age 20-23 months (MHFW, 2013). For most children, lack of access to food is not only the cause of malnutrition. Poor feeding practices, such as inadequate, inappropriate and faulty feeding practices undermines nutritional status. While breastfeeding provides optimal nutrition to the child and prevents infections, the timely initiation, and age-appropriate complementary feeding can substantially reduce malnutrition and related burden of diseases (MHFW, 2013). The first two years are very critical for any child and regarded as a window for survival and development. Investment in nutrition during this period is essential as undernutrition leads to stunting during this time which is largely irreversible.

6.2.1 IYCF: Situation in Tea Gardens of Darjeeling

IYCF guidelines clearly stated that breastfeeding should start as early as possible and colostrums should be fed to the newborn as it contains a high concentration of protective immunoglobulin and cell. The guideline also includes that an infant should

receive only breast milk and not even water for the first six months but the data indicated that the introduction of liquid and semi-solid or solid food often takes place before the recommended age of six months. Around 27 percent of total children in tea gardens of Darjeeling were exclusively breastfed till six months of their life. The importance of the timely introduction of complementary food has also been mentioned in the guidelines. After the age of 6 months, breastfed is no longer sufficient to meet the nutritional requirement of infants. For ensuring that the nutritional needs of a young child are met, breastfeeding must continue along with appropriate complementary feeding but the foods that are introduced after six months are basically boiled food and the food that are usually served to adults. Further, it has also been revealed (Table 6.1) that, on an average, the children of tea gardens of Darjeeling were breastfed up to the age of 24 months.

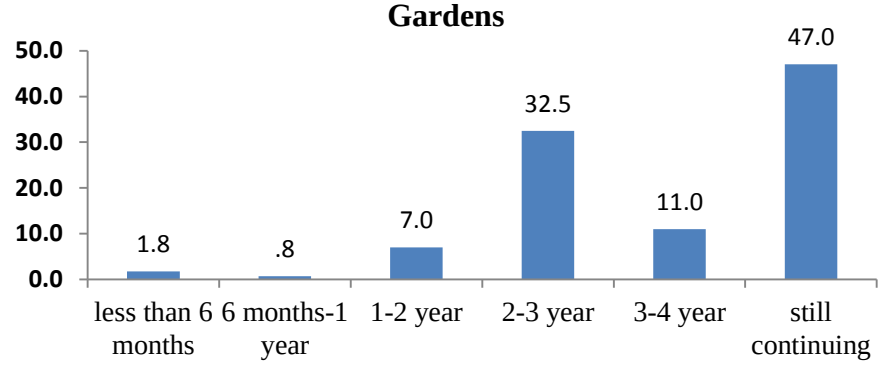
Table 6.1 Percentage of Children Breastfed within First hour of Birth and Exclusively Breastfed

Breastfed within the first hour of birth	72.0 percent
Exclusively Breastfed	26.5 percent
Average duration of Breastfed	24 months

Source: Computed from field survey data

The guidelines have also mentioned that a child should receive complementary foods with continued breastfed for two years or beyond but in the tea gardens of Darjeeling, 10 percent were breastfed less than the recommended age of 2 years (Fig 6.1). Out of total breastfed children, 47 percent children are continuing, out of which 80 percent are below the age of 2, 15 percent at the age of 3 and 5 percent at the age of 4.

Fig 6.1 Duration of Breastfed among Children in Tea Gardens



Source: Computed from field survey data

The guidelines alone with the timely and adequate complementary feeding also include the safe feeding. By safe feeding, it means that the food should be hygienically prepared and stored, and fed with clean hands using clean utensils because a poor hygiene practice has a direct outcome on the health of the children. It plays a major role in the increased burden of communicable diseases like diarrhoea, trachoma, and many others. The prevention of these communicable diseases is highly possible through the application of proper personal hygiene. But many people in rural areas may not understand what good or bad personal hygiene is; as a result, they land up with bad health outcome especially among children. Thus keeping this point under consideration the questions on personal hygiene such as "hand washed before preparing food for the child, hand washed before feeding a child, soap used for hand wash were asked to the respondent i.e. mother of a child. Most of the infections among child may be caught when mother's dirty hand touch the child's food and feed them. Thus, the proper hand wash is the best way to prevent this transmission and protect a child from getting sick. Though hand washing is simple things to do, it is often overlooked by the people.

In the present study area, it is observed (Table 6.2) that almost 30 percent of tea garden women do not wash their hand before preparing food for their child. When asked about washing their hand before feeding 80 percent reported that they wash their hand before feeding but when asked about the use of soap only around 60 percent reported using soap. Question on providing boiled or filtered water to the child was also asked, and it is observed that more than 50 percent drink unfiltered water.

Table 6.2 Percentage Distribution of Women by Hygiene Practices

Hygiene Practices	Frequency	Percent
Hand wash before preparing food for a child	295	73.8
Hand wash before feeding a child	319	79.8
Soap used for hand wash	238	59.5
Boiled water given to child	193	48.3

Source: Computed from field survey data

In order to show the percentage distribution of undernourished child by hygiene practices, hygiene index has been computed. It takes into account all the hygiene variables discussed above. Table 6.3 indicates that the relation between hygiene index and child nutrition is statistically significant at 0.01 level. The child in the absence of any hygiene practices is highly undernourished i.e. 72.6 percent whereas in the case of low hygiene index 64.2 percent were undernourished. Contrary to this, children with high hygiene index only 31 percent were undernourished. It indicates that with an increase in the hygiene practices the level of under-nutrition decreases. It is attributed to the fact that hygienic practices do not allow infectious diseases to transmit to their body resulting in better nutritional status whereas unhygienic practices transmit infectious diseases and lead to repeated cases of diarrhoea resulting in low nutritional status. Thus to reduce malnutrition in the tea gardens of Darjeeling, the emphasis should be given to make people aware regarding the importance of hygiene practice on the nutritional status of a child.

Table 6.3 Percentage Distribution of Undernourished Child by Hygiene Index

Hygiene Index	Normal	Undernourished
Nil	27.4	72.6
Low	35.8	64.2
High	68.8	31.2
Pearson's Chi-square Test	50.236 (000)***	

Source: Computed from field survey data

6.3 Universal Immunisation Programme

Immunisation programme is major public health intervention in the country. It is a key intervention for protecting the child from life-threatening conditions (Centre for Health Informatics, 2015). In India first programme on immunisation was adopted in 1978 as Expanded Programme on Immunisation (EPI) for immunising all children during the first year of life with DPT, OPV, BCG and typhoid-paratyphoid fever vaccines. In 1985, the program gained momentum and name of EPI were changed to

Universal Immunisation Programme[10] to be implemented in a phased manner to cover all districts in the country by 1989-90 (National Rural Health mission, 2013). In 1985, measles vaccine was added, and in 1990 Vitamin A supplementation was added to the program (Centre for Health Informatics, 2015). In 1992, Universal Immunisation Programme became a part of Child Survival and Safe Motherhood Programme and since 2005 it has been one of the key areas under National Rural Health Mission. Further, to achieve full immunisation, Indradhanush Mission was also launched by the Government in December 2014. The objective of this mission was to ensure full immunisation with all the vaccines free of cost for children up to two years and pregnant women. Despite its operation for over more than 30 years, UIP has not been successful in immunising all the children in the first year of their life. According to National Family Health Survey, 2015-16, four out of ten children do not receive full immunisation in India.

6.3.1 UIP: Situation in the Tea Garden of Darjeeling

In the tea gardens of Darjeeling, immunisation services are provided through Anganwadi centers. It helps to protect the children from life-threatening diseases. The vaccines used, stimulates child's immune system to protect against any subsequent infection or disease. It may also protect child's nutritional status and lead to improved growth (Anekwe and Kumar, 2012). The relationship between immunisation and prevention of malnutrition is well established (Abedi and Srivastave, 2012). Children who are undernourished are nine times more likely to die from infectious disease i.e. malaria, diarrhoea, pneumonia, and measles. A child suffering from such diseases finds it difficult to retain essential nutrients, as a result of a child is at a risk of falling into a dangerous state of malnutrition. Thus, the fight against malnutrition needs to be complemented with a fight against infectious diseases. In the study area, it was observed (Table 6.4) that ICDS plays a major role in providing vaccination to the child against all the disease. Almost all the women of tea gardens of Darjeeling visit ICDS for immunisation and are aware of the significance of vaccination against childhood diseases. Knowledge regarding the source of vaccination is also almost

[10] Under the UIP, Government of India provides vaccine to prevent eight vaccine-preventable diseases nationally, i.e. Diptheria, Pertussis, Tetanus, Polio, Measles, severe form of Childhood Tuberculosis and Hepatitis B and meningitis and pneumonia caused by Haemophilus influenza type B, and against Japanese Encephalitis in selected districts

universal i.e. 99.4 percent. Findings also reveal that almost all the children have received at least one vaccination against diseases.

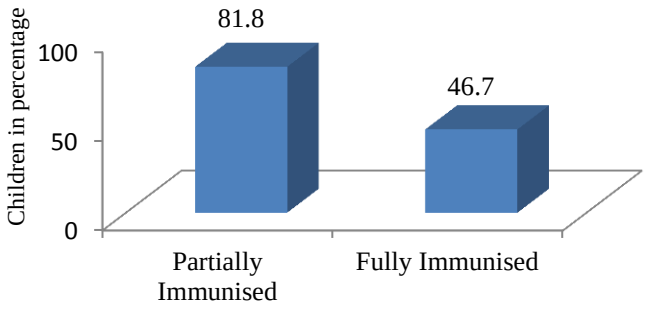
Table 6.4 Percentage of Children received Vaccination in Tea Gardens of Darjeeling	
Ever received vaccination	98.7
Full Immunisation	86.0
Vitamin A	93.6
Deworming	29.0

Source: Computed from field survey data

Further, when asked about full immunization which includes a child who has received one dose each of the BCG and measles vaccination and three doses each of the DPT and polio vaccines, it was observed that only 86 percent children were fully immunised, and the rate is the same in the district as well state average, i.e., 85.5 percent and 84.5 percent respectively. Nearly, all children (i.e. 94 percent) have received Vitamin A dose however, only 29 percent received a dose on deworming.

Looking at the nutritional level by immunisation (Fig 6.2) it is observed that compared to children partially immunised, the nutritional status is better for children who were fully immunised. It indicates that the children partially immunised were 82 percent undernourished as against 47 percent fully immunised.

Fig 6.2 Undernourished Child by Immunisation in Tea Gardens of Darjeeling



Pearson's Chi-square Test 18.7 (000)***
Source: Computed from field survey data

Further an analysis also indicates that there exist an association between vaccination program and child nutrition in the tea gardens of Darjeeling. The percentage of undernourished child is lower to the child who is fully immunised. This could be because "vaccination provides protection against morbidity and this in long run improves nutritional status as repeated illness leads to deterioration of health" (Abedi and Srivastava, 2012). A similar finding has also been observed in Siliguri where the likelihood of underweight was higher among non-immunised children than that of fully immunised children (Ray et al., 2000).

6.4 Integrated Child Development Programme

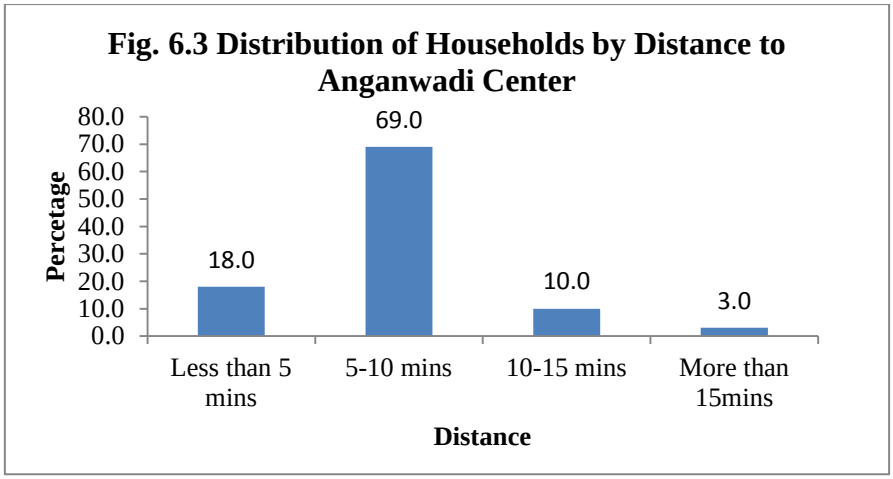
Launched by the Government of India in 1975, the Integrated Child Development Services (ICDS) Scheme is one of the flagship programmes and represents one of the world's largest and unique programmes for early childhood care and development (ICDS, 2009). One of the main objectives of the scheme is to improve nutritional and health status of children of 0-6 years age group. Other objectives are 1. to lay the foundation for proper psychological, physical and social development of the child 2. to reduce the incidence of mortality, morbidity, malnutrition and school dropout. 3. To enhance the capability of the mother to look after the normal health and nutritional need of the child through proper nutrition and health education. Started in thirty-three experimental blocks in 1975-76, the ICDS programme is a major social development initiative of the Government of India giving more preference to those which have a comparatively larger proportion of the population of tribal people and other disadvantaged categories. All ICDS services are provided through a village-based center, the Anganwadi Centre and each Anganwadi Centre is run by Anganwadi workers supported by a helper. The packages of services provided to the beneficiaries of the programme are *supplementary nutrition, immunization, health check-up, referral services, non-formal pre-school education and nutrition and health education*. The beneficiaries of the programme are children below six years, pregnant and lactating mothers and women in the age group of 15-44 years.

6.4.1 ICDS/Anganwadi: Situation in Tea Gardens of Darjeeling

Apart from the survey of children, 10 Anganwadi Centers were also surveyed. The purpose of the survey was to look at the functioning of Anganwadi centers and their role in influencing the nutritional status of the child. The survey data, as well as census data, shows that all the tea gardens of Darjeeling have Anganwadi Center. Some of the tea gardens have more than one AWC because of their large size as one center could not cover or serve the entire area. Most of the Anganwadis are working in semi-pucca building, and more than half were running in a rented house such as primary schools, panchayat building, and some private house. The budgetary allocation to rent a space is low and as a result Anganwadi Centers (AWCs) are frequently found in small, unclear and dilapidated locations. Some AWCs have a separate place for cooking but do not have enough space for outdoor activities. Most of the centers do not have toilet facilities. The road connected to AWC is unmetalled and is usually located at the distance of 10 minutes walk. Around 70 percent of Anganwadi centers are located at the distance of 5 to 10 minutes, 18 percent at the distance of 5 minutes, 10 percent 10-15 minutes and 3 percent more than 15 minutes (Fig 6.3).

Plate 6.1 ICDS Center of Ambootia Tea Garden

Plate 6.2 ICDS Worker Preparing Food



Source: Computed from field survey data

Out of the total children covered in the study area, 93 percent were registered as beneficiaries, but only half of them utilise the service (Table 6.5). The survey clearly reveals that though a large number of targeted groups have been registered as beneficiaries, some of those registered groups did not utilise ICDS and some utilised only one or two services.

Table 6.5 Percentage of Beneficiaries Registered and Accessed Anganwadi Centers in Tea Gardens of Darjeeling

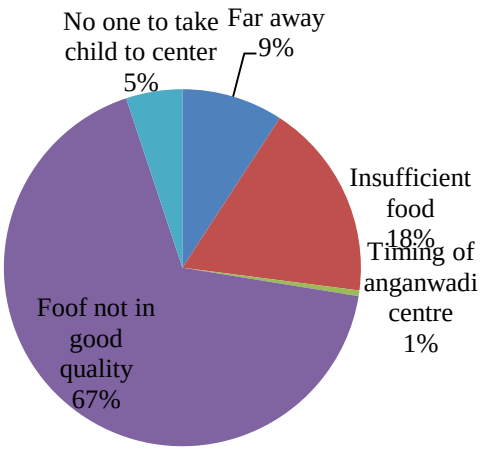
Beneficiaries registered in Anganwadi Centers	93 percent
Beneficiaries received any services	51 percent

Source: Computed from field survey data

Plate 6.3 Surveying ICDS Worker in Tea Gardens

These differentials in seeking behavior by registered beneficiaries could be due to a number of factors. It was observed (Fig 6.4) that out of total sample population of tea gardens of Darjeeling, 67 percent did not find food served in Anganwadi Centers is of good quality, 18 percent reported that food was insufficient to provide for registered children, 9 percent reported distance as a factor for not accessing Anganwadi Center and 5 percent reported that they do not have a single member in the household who can take the child to Anganwadi Center.

Fig 6.4 Problem Faced to Access Anganwadi Centers in Tea Gardens of Darjeeling



Source: Computed from field survey data

The objective of ICDS in reducing the prevalence of malnutrition is basically through two services i.e. growth promotion and the provision of supplementary food (Gragnolati et al., 2006). Growth monitoring activities are done with the help of weighting scales, growth cards, and wall or book charts. Most of the Anganwadi centers have all these equipment, but many AWWs reported that they do not weight young child every month and only a few Anganwadi centers have recorded height of the child. The field observation has also unveiled the truth that though most of the Anganwadi centers are well equipped with all the necessary equipments it fails to operate effectively because the Anganwadi workers are not fully competent with the interpretation of growth cards/curves. It has also been observed that Anganwadi centers have not identified any undernourished child and were not mentioned in their register, but when the child was examined at the time of the household survey, many were found undernourished. There is no doubt about the skills of Anganwadi workers

to mobilize the community to support ICDS, but their performance is constrained by poor quality training and the pressure of a large and diverse workload.

Survey data show that all the Anganwadi workers have at least matriculated from high school, but when asked regarding training course, most women underwent short-term in-service training. Further, they are also too much occupied with the activities like providing supplementary nutrition and preschool education that they do not get time for other important ICDS activities like health and education, nutrition, growth promotion, referral service, home visit and meeting with the community. In addition to this Anganwadi Centers also reported that they are overburden with works, they have to maintain 12 different registers and sometimes they are called upon to assist other government programmes like immunisation and pulse polio campaign. Home visit, advice on matters related to breastfeeding, antenatal care appeared to be neglected task by Anganwadi workers in the tea gardens of Darjeeling, but they do provide information and importance of timely immunisation. Around 40 percent of the children have received the immunisation card from Anganwadi Centers, and almost all the women are aware of importance of timely immunisation against child diseases.

Supplementary food which is also provided by Anganwadi centers is one of the most well known ICDS interventions to combat malnutrition. In the study area, the child was provided with food either in the form of a ready-to-eat snack or meal cooked by the Anganwadi workers (AWCs). The respondent i.e. mother of the child reported that some of the Anganwadi centers provide two biscuits each to a child instead of providing nutritious meal supplied by the government, and some of the Anganwadi workers take away supplied meal to their houses for self-consumption. Further, it was also reported by some of the Anganwadi workers that the ration provided to the Anganwadi centers were not of good quality and so in order to maintain the quality of the food, the Anganwadi workers exchange it in the local market at a lower price. But still, 67 percentage of surveyed mother reported that the food provided in the Anganwadi cenetrs were not of good quality, and so they do not prefer to send a child to Anganwadi centers. Apart from this, it was also observed during field survey that access to ICDS is also being determined by household attitude and behaviour. Some mother think that they do not need food from AWC and some fail to collect food

either they are too busy with their daily activities or least concerned about that. The field survey revealed that among those women who thought and reported that their child gets adequate food, 60 percent children were undernourished when assessed.

6.5 Impact of ICDS on Nutritional Status of Children

In this section, an attempt has been made to explore the impact of ICDS on child nutrition in tea gardens of Darjeeling. For impact analysis, two groups were identified, "with and without" beneficiaries. Though ICDS being a universal programme now, conceptually it is not possible to separate the nonbeneficiaries from beneficiaries. However, beneficiaries are those children who have received any services from Anganwadi centers and nonbeneficiaries are those who have not received any services. Even if some children are not receiving any benefits from AWC, it would not be valid to compare the value of any output with that of beneficiaries, without controlling for the influence of other variables which have an important bearing on the nutritional status of a child (Planning Commission, 2011). Thus keeping this point in mind, other variables have also been considered.

The survey revealed that though a large number of children in the tea gardens of Darjeeling were registered in Anganwadi center, some did not utilise the benefits. Thus looking at the prevalence of malnutrition among beneficiaries and non-beneficiaries it is observed (Table 6.6) that percentage distribution of undernourished child in more in Anganwadi center coverage area (62.4 percent) than that of non-coverage area (37.6 percent). It indicates that the children who are assessing services from ICDS are more undernourished than the children who are not accessing any services.

Table 6.6 Percentage Distribution of Undernourished Children by AWC Coverage and Non-coverage Area in Tea Gardens

AWC Coverage	Undernourished
Non-Beneficiaries (Not Covered)	38.7
Beneficiaries (Covered)	62.7
Pearson's Chi-square Test	22.885 (000)***

Source: Computed from field survey data

Before drawing any conclusion, it is important to explore the background characteristics of beneficiaries and non-beneficiaries of Anganwadi/ICDS services. It is observed (Table 6.7) that compared to the child covered by Anganwadi centers, the child not covered by Anganwadi ceneters have higher level of mother's education, higher living standard, and higher income level. Thus, the beneficiaries of Anganwadi services are basically from low socio-economic background. Further, it is also observed that the percentage of SC and ST is also high in areas covered by Anganwadi ceneters. As the main aim of ICDS is to reach out to the deprived section of the society, these findings clearly indicate that the children belonging to the deprived group i.e. low social and economic status are accessing more services than other children.

Table 6.7 Percentage Distribution of Beneficiaries and Non-beneficiaries of ICDS Services by their Background Characteristics

	Beneficiaries	Non-Beneficiaries
Religion(Hindu)	73.5	69.4
Buddhist	13.7	17.3
Christain	7.4	9.7
Others	5.4	3.6
Pearson's Chi-square Test 2.466 (.481)		
Caste (Others)	15.2	11.7
ST	28.4	25.5
SC	17.2	14.3
OBC	39.2	48.5
Pearson's Chi-square Test 3.683 (.298)		
Mother's education (Below primary)	52	33.2
Middle	33.3	31.6
High	14.7	35.2
Pearson's Chi-square Test 25.32 (000)***		
Standard of living Index (low)	24.5	12.8
Middle	68.1	54.6
High	7.4	32.7
Pearson's Chi-square Test 42.745 (000)***		
Household Income(poorest)	29.4	18.9
Poor	34.8	18.9
Middle	23	24.5
Rich	12.7	37.8
Pearson's Chi-square Test 39.064 (000)***		

Source: Computed from field survey data

The table 6.8 shows the net effect of programmatic factors on the nutritional status of a child. Household conditions and socio-economic factors have also been included in the model. Logistic regression has been employed with being undernourished as a dependent variable and other variables as independent or as controls. The analysis indicates that programmatic factors play an important role in combating malnutrition in the tea gardens of Darjeeling. It indicates that child access to ICDS services has a significant positive influence on the nutritional status of a child. Compared to a child not accessing Anganwadi services, the probability of undernutrition is 75 percent less to the child accessing services. Similar findings have been observed in many studies conducted by Renu and Rekha (1982); Tandon (1989); Sharma and Gupta (1993); Vaid and Vaid (2005). The improvement in the nutritional status of those accessing services may be due to the supplementary nutrition provided by Anganwadi centers as well as the health and nutritional education provided to the mothers.

Further, it is also observed that immunisation programme has a significant influence on the nutritional status of a child. The fully immunised child is 81 percent less likely to be undernourished as compared to a partially immunised child. This is mainly because vaccine provided through immunisation programmes protects the child against morbidity and, in the long run, improves nutritional status (Das and Hossain, 2008; Ray, 2000; Abedi and Srivastava, 2012). It has also been highlighted in many studies that child coping with diseases like pneumonia, diarrhoea, malaria, and measles finds it difficult to retain essential nutrients, thus putting the child at risk of falling into a dangerous state of malnutrition. The prevention of these communicable diseases is possible through the application of proper hygiene practices. Thus apart from access to ICDS and immunisation programme, hygiene practices also hold a significant positive influence on the nutritional status of a child in the tea gardens of Darjeeling. The household with better hygiene practices is 86 percent less likely to have an undernourished child and is significant at 0.01 level. Social group also hold a significant influence on the nutritional status of a child. Compared to other caste, tribal children are 3 times more likely to be undernourished. The standard of living and income of the household also has a significant influence on the nutritional status of a child. The income of the household is strongly related to the nutritional status of a child. In the study area it is observed that with an increase in the household income, the likelihood of undernourishment decreases which is basically due to the fact that

with an increase income, the tendency to spend more money on nutritious food, warm clothing, medicine and health care services increases which directly impact child health outcome (Barrett and Browne, 1996; Mondal and Sen, 2010; Tigga et al., 2015).

Table 6.8 Odd Ratio showing Net Effect of Programmatic Factors on Nutritional Status of Children in Tea Gardens of Darjeeling		
	Sig.	Exp(B)
(Access to ICDS services) No [(r)]		
Yes	.09	0.25*
(Immunisation) Partially [(r)]		
Fully	.06	0.19**
(Growth of child recorded) No [(r)]		
Yes	.44	0.602
(Hygiene Index) Low [(r)]	.01	
Medium	.01	0.08***
High	.00	0.142***
(Place of seeking treatment) Institution [(r)]		
Non institution	.38	0.668
(Caste) Others [(r)]	.23	
ST	.08	3.97*
SC	.41	0.608
OBC	.86	1.108
(Religion) Hindu[(r)]	.39	
Buddhist	.69	1.370
Christain	.24	0.415
Others	.29	0.357
(Mother's education) Illiterate and primary level [(r)]		
Above Primary level	.25	0.596
(Standard of living Index) low [(r)]	.18	
Middle	.07	0.34*
High	.64	0.596
(Household Income) Poorest [(r)]	.00	
Poor	.08	0.32*
Middle	.00	0.04***
Rich	.00	0.01***
-2 Log likelihood	**151.306**	
Cox & Snell R Square	**.397**	
Nagelkerke R Square	**.539**	

***0.1 % Level of Significance, **0.05 % Level of Significance, *** 0.01 % Level of Significance**

[(r)] Reference category

Source: Computed from field survey data

6.6 Conclusion

The analysis of the data from the field survey in the tea gardens of Darjeeling reveals that there are differences in the programme layout and its actual implementation. However, ICDS which aims to address the multidimensional cause of malnutrition seems to have effective results on the nutritional status of the child in the tea gardens of Darjeeling. Immunisation which is covered under the flagship of ICDS also emerged as a significant factor in combating child nutrition. Almost all the children in the tea gardens of Darjeeling are immunised against various diseases. However, the Anganwadi workers are not properly trained in identifying the undernourished child. They are not fully competent with respect to the interpretation of growth cards/curves. Not a single incident of referral of the undernourished child to health center has been encountered during the field survey. The Anganwadi workers were very much involved in maintaining register as well as engaged in providing assistance to many government programmes to be executed. Instead of doing their actual job, the Anganwadi workers are overburdened with extra additional work and fail to mobilised targeted population. As a result of which more than 50 percent do not access the ICDS services though 99 percent of total children were registered.

Further, percentage figure of child under nutrition also shows that the area covered by ICDS services have higher percentage of under nourished child compared to the area not covered by ICDS services. The background characteristics of ICDS beneficiaries indicated that they fall under the households which have lower living standard and lower income compared to non ICDS beneficiaries. However, the logistic regression analysis indicates that the probability of child being undernourished is lower among child accessing ICDS services compared to child not accessing any ICDS services. It could be through the provision of supplementary nutrition by ICDS centers, the probability of child being undernourished in low. However, dissatisfaction on the quality of supplementary food has been reported during survey. It is revealed that more than 50 percent of women in the study area reported unsatisfactory quality of food served in ICDS centers. Some of the Anganwadi workers also reported the worst quality of rice and dal provided to them. The quality of services especially supplementary food provided by ICDS has not reached up to the mark where effective result on child nutrition is visible. There are still a large number of children in tea garden area covered by ICDS where undernutrition is very high. Thus an emphasis

should be given to the regular monitoring of food supply in the ICDS centers as well as the cooked food served to the children by Anganwadi workers. Along with the monitoring of supplementary food, focus on immunisation should also be given, as immunisation in tea gardens of Darjeeling is playing an effective role in combating child undernutrition. Further, it has also been realised that with regular monitoring of food, the quality of food served to child increases which may encourage more people to access ICDS services resulting in better child health outcome on a long run. Thus, continuous monitoring of the functioning of ICDS centers as well as focus on the welfare of ICDS workers in the tea gardens of Darjeeling is required in order to achieve a targeted goal set by ICDS.

CHAPTER -7

CHAPTER 7

SUMMARY AND CONCLUSION

Nutrition is increasingly been recognised as a basic pillar for social and economic development (WHO, 2011). United Nations while adopting sustainable development goals in 2015 laid down the goal to "*End all form of Malnutrition by 2030*." It is one of the most important health and welfare problems among children. It is a formidable challenge faced by every country. It results from the "interaction of poor-quality diets and poor-quality health care environments and behaviors, which are shaped in part by a host of underlying factors, such as political instability, poor economic development, conflict, inequality, and some dimensions of globalization" (IFPRI, 2016, p 2). The key ingredients that can keep a country, free from all form of child malnutrition are through adequate maternal nutrition before and during pregnancy and lactation; exclusive breastfeeding; optimal breastfeeding in the first two years of life; nutritious and safe foods in early childhood; and a healthy environment including access to basic services.

In the study area, substantial segment of children is undernourished. The findings from the primary survey indicate that 44 percent, 20 percent, and 36 percent children in tea gardens of Darjeeling are stunted, wasted and underweight. The study is divided into seven chapters. The first chapter discusses the introduction, literature view, and conceptual framework. The second chapter elaborates upon the study area, selection of the study area, and objective. It also includes a description of the data source and analytical method used in the study. Chapter three presents the living condition and cultural practices in tea gardens of Darjeeling by ownership pattern. Chapter four discusses the nutritional status of a child and its variation with the pattern of livelihood among tea garden dwellers. Chapter five highlights the role of the mothers in influencing the nutritional status of a child. Chapter six assess the functioning of programmatic factors, especially ICDS in tea gardens of Darjeeling. Chapter Seven is the present chapter that will highlight major findings, limitation of the study, and discusses summary and conclusion of the research.

7.1 Summary of the Findings

The main purpose of the research was to examine the nutritional status of children in the tea gardens of Darjeeling. The secondary data indicates that the nutritional status of a child is comparatively better in West Bengal than the national average, and much better at district level than at the state level. However, available literature and secondary data i.e. Census indicates that the people of tea garden are socio-economically lagging behind. Their poor socio-economic conditions, overcrowded and unhygienic living condition make the people of tea garden vulnerable to various communicable diseases and malnutrition. The reliable information on nutritional status of children of tea gardens workers is lagging behind. There is a lack of micro-level study, especially in the tea garden areas. Most of the studies conducted are either done in the tea gardens of Assam or Doars/Terai regions of North Bengal. No study on the nutritional status of Children of tea gardens of Darjeeling has been conducted so far. The available literatures on tea gardens of Darjeeling provide a glimpse of their living condition which indirectly throws light on the possibility of having a poor health condition. Thus taking this point into consideration, the study on nutritional status of children of workers in tea garden of Darjeeling has been carried out. An attempt has also been made to look at the living condition in tea garden by ownership pattern; how couple's occupational combination affects child nutrition, how mother work influence child nutrition, and the assessment of the functioning of ICDS in combating child nutrition in tea gardens of Darjeeling.

In order to address the research questions, the field survey was carried out in 10 tea gardens. The sample tea gardens have been selected on the basis of population size taking into consideration diverse ownership patterns, i.e. private and public limited companies. The criteria such as tea gardens having household more than 350 and tea gardens having children more than 150 has been taken into consideration while selecting the sample tea gardens. Total 400 households from 10 tea garden based on Probability Proportional to Size (PPS) technique with children between,1-5 year are selected under study.

For the evaluation of nutritional status of children, three most commonly used internationally recognised indicators i.e. stunting, wasted and underweight has been used. Each of these indices shows a nutritional history of a child and is compared

against an international reference population developed from anthropometric data collected in the United States by the National Centre for Health Statistics (NCHS) as recommended by World Health Organisation. Children whose measurement falls below -2 standard deviations of the reference population median are considered undernourished i.e. stunted, wasted and underweight. Further, Composite Index of Anthropocentric Failure (CIAF) developed by economist Peter Svedberg which incorporates all undernourished children (wasted/ or stunted/ or underweight) has been calculated and used for the final analysis. All the three indices i.e. stunting, underweight and wasted of nutritional status of a child in the study area has been derived with the help of **WHO AnthroPlus** software. Further, for the analysis of the nutritional status of a child, various statistical techniques like Pearson's Chi-square Significant Test, Correlation Analysis, Principal Component Analysis (PCA), and Binary Logistic Regression has been used. The principal findings of the study are summarised here.

7.1.1 Living Condition in Tea Gardens by Ownership Pattern: In the context of widespread crises in tea plantation sector, living condition in tea gardens has been examined. The availability of basic facilities, nature of work, their living condition, and food habits has a direct bearing on the health of workers and their child. The Plantation Labour Act as passed by the Parliament in 1951, empowers state government to take all feasible steps to improve the living condition of plantation workers. It directs the employer to provide medical, housing, sickness, educational facility, and various other social security benefits to the workers and their family. Taking this point into consideration living condition in tea gardens by ownership pattern has been examined.

The findings both through secondary as well as primary field survey data reveal that tea gardens of Darjeeling are deprived of many basic facilities. Apart from electricity, all the tea gardens are deprived of all other basic facilities. Educational facility, medical facility, availability of drinking water, drainage system, transport facilities, banking facilities are lacking in the tea gardens of Darjeeling. Only 11 percent of all the notified tea gardens have educational facilities above secondary level. Most of the tea gardens do not have medical facilities. Around 10 percent and 36 percent do not have drinking water and drainage facilities respectively. Almost half of the tea

gardens are not approached by pucca road, and one-third do not have access to transport facilities. Also, bank and post office facility are inadequate. The tea gardens authority is not paying much attention to improving the living condition of workers. Their low wages has always been justified with generating employment and providing some basic amenities and facilities to workers and their families. Houses for workers were to be constructed by the employers according to the Plantation Labour Act, but most of the workers construct and extend the houses at their own cost. More than 20 percent household does not have access to a latrine and defecates in an open space. Cultural practices also hold a significant position in the tea gardens of Darjeeling. A large number of population in the tea gardens seems to believe in the traditional healer, faith healer, supernatural forces and magical practices. Culturally based food consumption patterns and restrictions are common in the tea gardens of Darjeeling. Most importantly, nutritious foods such as animal meats that lactating women need to regain their health are prohibited. Consequently, the health of the mothers and their children are compromised.

Further, in order to see which sector of tea garden is providing better welfare of the workers, composite index is prepared. It has taken all the parameters that the Plantation Labour Act has asked employers to provide for the well-being of employees (i.e. housing facilities, drinking water facility, toilet facility, educational facility, medical facilities, crèche facility). The finding indicates that compared to public sector tea gardens, private sector tea gardens are providing better welfare to the workers.

Another issue that has been highlighted by the study is the source of livelihood in the tea gardens of Darjeeling. Since its beginning, the tea industry has played a significant role in the region by providing direct employment, but in last three to four decades with the decline of the tea industry, livelihood is challenged because no other large industries, except tourism, is established in the region. The gradual decline of the Darjeeling tea industry has affected the sustainable livelihoods of plantation workers. Further, the continuous increase in population and lack of basic facilities in tea gardens has also been one of the main causes of worry. With an increase in population and decline in the tea industry, unemployment in tea gardens has increased which has compelled people to search for alternative livelihoods. The study indicates that half of

the tea garden dwellers are employed in an economic activity out of tea gardens. Keeping this point into consideration, two set of couple's combination i.e. couples fully dependent on tea garden for livelihood and couples partially dependent on tea garden for livelihood has been identified.

7.1.2 Occupational Combination and Nutritional Status of the Child: Two set of couple's occupational combinations identified on the basis of livelihood are, fully dependent on tea garden where both husband and wife are employed in tea garden, and partially dependent where one partner from the couple is employed in tea garden and other in an economic activity out of tea garden. One of the objectives of the present study is to explore how occupational combinations influence the nutritional status of a child in tea gardens of Darjeeling. The findings indicate that if either of the parents is employed out of tea garden, the nutritional status of a child is better which means that with the diversification of occupation in the tea gardens of Darjeeling the nutritional status of the child improves. This is mainly because any work out of tea garden generates more income. The tea garden workers who are assumed to be part of the organised sector receive pay much lower than wages in the unorganised sector. The average monthly incomes of permanent and temporary workers are Rs. 1950 and Rs. 2250 respectively.

Ownership pattern of tea garden does not hold a significant influence on nutritional status of a child when entire sample is considered. However, in the case of couples fully dependent on tea garden for livelihood, tea garden ownership pattern holds a significant influence. The nutritional status of a child is better in the tea garden owned by the private sector than public. The finding indicates that tea garden owned by private sector provides better facilities and attention to the welfare of the workers than tea gardens owned by the public sector.

Further, a couple fully dependent on tea garden has also been segregated into two subgroups: both husband and wife working in tea garden, and where only one individual from the couple is working in tea garden. The analysis indicates that nutritional status of a child is better among couples where both husband and wife are working in tea gardens. This is mainly because when both husband and wife are economically active, it not only increase the household income but also increases the decision-making power in providing better dietary and health care which might have a

positive influence on a child's nutritional status. To some extent, an analysis also indicates that involvement of women in economic activity has some important influence on nutritional status of a child because compared to a couple where only husband is working the nutritional status is better among couple where both husband and wife are working. In this context, an attempt has also been made to look at the mother and child relation in tea gardens of Darjeeling. One of the major objectives is to explore the pathways through which mother's work influence child nutrition in tea gardens of Darjeeling.

7.1.3 Mother's Work and Child Nutrition: Mother's economic participation is generally expected to have a positive effect on family income and thus on nutrition of the children. But this straight cut relationship has also been questioned in the context that working woman has less time to care her child and breastfed which might lead to the low nutritional status of the child. Thus, in this context, an attempt has been made to understand the complexities associated with the mother's work status and nutritional status of a child in tea gardens of Darjeeling.

The findings indicate that more than half of the women in tea gardens are economically active, but there is no decision for which a majority of women alone are main decision maker. Compared to nonworking women the decision-making autonomy and financial autonomy is high among working women. The working women come out to be an important contributor to household's income. Their participation in an economic activity has helped in raising the household's income which emerged to have a significant positive influence on the nutritional status of the child. Time for child care has a negative influence on the nutritional status of a child. With the increase in the time for child care the level of under nutrition increases, this could be due to the fact that mothers are giving more time for care to undernourished child or it could be due to the overlapping of reporting of time by mother in different activities. The time for child care always overlaps with household activities and time for family. Because when the total hours in a day allotted for different activities by women is summed up, it is coming up to be more than 24 hours.

In the case of non-working women, time for leisure is more important. Mother with more leisure time, act more effectively in improving the nutritional status of a child. If a nonworking mother has more time for herself, then she is able to care of her child.

However, in the case of working women, mother leisure time does not hold any significant influence rather it is their raised household income with the participation of women in economic activity that has a significant positive influence on the nutritional status of the child.

7.1.4 Assessing Effectiveness of ICDS Services in Tea Garden: Apart from the socio-demographic and economic factors, programmatic factors also influence the health outcome of a particular region. The effective implementation of health program can also improve the nutritional status of a child. Thus keeping this point into consideration, one of the objectives was to explore the implementation and effectiveness of ICDS in improving the nutritional status of a child.

The analysis reveals that there are differences in the programme layout and the actual implementation of ICDS in tea gardens of Darjeeling. The findings indicate that Anganwadi workers are not properly trained in identifying an undernourished child. They are not fully competent in the interpretation of growth cards/curves. Not a single incident of referral of the undernourished child to health center has been encountered during the field survey, but when the child was examined at the time of the household interview, many were found to be undernourished. However, there is no doubt about the skills of Anganwadi workers to mobilize the community to support ICDS, but their performances are constrained by the pressure of a vast and diverse workload. Most of the Anganwadi workers in tea gardens of Darjeeling received only short-term in-service training. They are overburdened with extra additional work and fail to mobilise targeted population. As a result of which more than 50 percent do not utilise the ICDS services even though 99 percent of total children were registered. Home visit, advice on matters related to breastfeeding, antenatal care appeared to be neglected task by Anganwadi workers in the tea gardens of Darjeeling, but they do provide information and importance of timely immunisation. Around 40 percent of the children have received the immunisation card from Anganwadi centers, and almost all the mothers are aware of importance of timely immunisation againt child disease because the responsibility of monitoring immunisation services is solely given to Anganwadi workers.

Immunisation which is covered under the flagship of ICDS has also emerged as a significant factor in combating child nutrition. Almost all the children in the tea

gardens of Darjeeling are immunised against various diseases. This is mainly because vaccines provided through immunisation programmes protect the child against morbidity and, in the long run, improves nutritional status (Das and Hossain, 2008; Ray, 2000; Abedi and Srivastava, 2012). Along with immunisation, safe feeding through proper personal hygiene also helps in combating undernutrition. However, better hygienic practices are still low in tea garden of Darjeeling.

Further, the analysis also indicates that compared to a child not accessing any ICDS services, the probability of child being undernourished is lower among child accessing ICDS services. It could be through the provision of supplementary nutrition by ICDS centers, the nutritional status of the child accessing ICDS services is better. However, dissatisfaction on the quality of supplementary food has been reported by many women during survey. It is revealed that out of total women who did not access ICDS services, more than 50 percent reported the bad quality of food served in ICDS centers. The percentage figure of undernourished child is also more in the area covered by ICDS services than the area not covered by ICDS services which indicates that the quality of services especially supplementary food provided by ICDS has not reached to the mark where effective result on nutritional status is visible.

7.2 Strength and Limitation of Study: The current study has made an attempt to explore the nutritional status of the child through an anthropometric approach in the tea gardens of Darjeeling. There are two approaches Anthropometric and Calorie/nutrition intake approach in examining nutritional status, but the current study has confined itself to anthropometric approach and has not dealt with Calorie intake approach. It is beyond the scope of the study to cover all the aspects of child nutrition. The study on the nutritional intake of children especially calorie intake in the tea garden of Darjeeling has not been covered with the view that there is always a chance of misleading information. However, a further study on this area can be conducted taking into consideration Calorie/nutrition intake among children in the tea garden of Darjeeling.

However, over the years it has been argued that anthropometric approach is a better measurement than calorie approach. In the calorie intake approach, the effect of intra-personal and interpersonal variation in calorie requirement is ignored (Chandran, 2009). One individual's calorie requirement may vary from time to time depending on

the change in climatic condition, work pattern and state of health. Further, calorie intake of individuals of same age and sex, same work pattern and same health condition also varies with the differences in their genetics. So it is suggested that nutrition assessment of any individual should be made on the basis of output measure rather than input measure. The output measures include measures of anthropometric indicators, clinical signs of malnutrition, biochemical indicators, and physical activity. Out of all measures, anthropometric measure is considered to have an advantage because unlike anthropometric measure, other measures are useful only when the level of malnutrition is extreme. A disadvantage of anthropometric indicator is its lack of specificity, because changes in body measurement are also sensitive to several other factors such as altitude, stress and genetic heritage (WHO, 2013). However, effects of these factors on growth do not reach their full potential in the children up to five years age, and their effects on anthropometric measurement are negligible. Considering these advantages, the nutritional status of a child is studied from the anthropometric point of view.

7.3 Conclusion: The challenge of combating child nutrition in tea garden is the major cause of worry as a living condition in this area is very poor. The employees are not provided with the facilities that tea gardens authority is supposed to provide according to the Plantation Labour Act, 1951. This clearly shows the highhandedness and negligence towards the workers in tea garden of Darjeeling by the tea authority. Compared to the public sector, the condition is better in private sector tea gardens. The problems of stagnant tea industry with low wage rate accompanied by population pressure have forced the people of tea gardens to find an alternative source of livelihood. Compared to the couples who are fully dependent on tea gardens, the nutritional status of children is better among couples partially depended on tea gardens for livelihood. This is mainly because any work out of tea garden generates high income as the wage rate in tea garden is very low. Further, the nutritional status of children of a couple partially dependent on tea gardens is also no better. A large percent of children are undernourished which is basically because tea garden dwellers engaged in an economic activity out of tea garden are engaged mostly in a low income job. Involvement of women in economic activity has an important bearing on child nutrition as it effect through household income. Among non working women, income as well as time for leisure is more important which means if mother has more

time for herself then the positive influence on child nutrition is observed. Further, the existence of ICDS services in tea gardens also help in combating nutritional status of a child. Therefore, this study has brought up various issues and linkages that influence the nutritional status of children of workers in tea garden of Darjeeling.

Some of the important strategies for policy implication need to be outlined in this section.

- The study indicates that in order to improve the nutritional status of a child in tea gardens of Darjeeling household income should be raised. The study throws light not only on the low wage rate in tea garden but also on the type of work tea garden dwellers are engaged in the tea garden. The tea dwellers are basically in lower job which generates lower income. The level of literacy is very high 80 percent, but education above secondary is only 15 percent which means the possibility of absorption of workers in higher job is very low as a result a large number of tea garden dwellers end up working in low-income jobs. Thus an effort should be made to revise the wage rate of tea garden workers as well as special attention, should be provided to the welfare of the workers.
- The analysis indicated that tea garden authorities lag behind in providing basic facilities in tea gardens of Darjeeling. Compared to a private sector, the living condition is even worst in public sector tea gardens. An initiative should be taken by the government to look at the proper implementation of Plantation Labour Act which enforces the tea authority to provide workers and their family members with some facilities like housing, education, medical, sanitation and other benefits. Thus, the welfare as suggested by Plantation Labour Act, 1951 guidelines needs to be implemented effectively.
- Malnutrition occurs largely due to inappropriate feeding and hygiene practices. The study indicates that hygience practices in tea gardens of Darjeling is low. The level of under-nutrition is very high among children where the appropriate feeding and hygiene practices are low. Thus, there is also need to educate a community about the benefit of better hygienic practices, proper feeding and weaning practices. This can be done through strengthening ICDS services, by providing better training to the Anganwadi

workers regarding such practices so that they can provide better counseling and care for specific health and nutrition problems, and encourage the families for adopting such appropriate practices.

- Further, in case of programmatic factors, it is observed that existence of ICDS services in tea gardens of Darjeeling has a significant positive impact on improving nutritional status of a child. Compared to a child not accessing ICDS services, the child accessing ICDS services has lower chances of being undernourished, but the level of undernutrition is still very high. This suggests that ICDS services in tea gardens have not reached a mark where the actual effect on the child nutrition in tea gardens of Darjeeling is visible. A large percentage of women who did not access ICDS services reported bad quality of food as a major reason for not accessing services. If the quality of supplementary food in ICDS is improved then the effective result on child nutrition could be visible. So the proper and continuous monitoring of ICDS services in the tea garden is required in order to reach the target set by UN *"End of all form of undernutrition by 2030."*

The study point outs that there is a need for concerted efforts towards improving nutritional status of the child in tea gardens of Darjeeling. The problem needs to be addressed. The government needs to check the proper implementation of Plantation labour Act, and reconsider and upgrade the wage rate of tea garden employees. There is a need to educate the community about the benefit of proper hygienic practices, proper feeding and weaning practices. Lastly, it has also been realised that in order to improve the nutritional status of children in the tea gardens of Darjeeling, more emphasis should be given on improving and monitoring quality nutritional programme.

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Appendix 1. Logistic Regression showing Net Effect of Background Characteristics on Nutritional Status of Children				
	Stunted	**Wasted**	**Underweight**	**CIAF**
Background Characteristics	Exp(B)	Exp(B)	Exp(B)	Exp(B)
(Current age) Below 25 years[(r)]				
25-30 years	0.59*	0.78	1.05	0.74
Above 30 years	0.82	0.83	1.087	0.76
(Age of the child) 12-23 months[(r)]				
24-35 months	0.93	0.68	1.164	0.83
36-47 months	1.16	0.38**	0.876	0.93
48-60 months	1.75	0.39**	1.432	1.02
(Sex of the child) Male[(r)]				
Female	1.92**	1.86**	1.45	1.72**
(Caste) General[(r)]				
ST	1.53	1.88	1.32	1.12
SC	0.71	0.97	0.84	0.77
OBC	0.62	0.8	0.75	0.62
(Religion) Hindu[(r)]				
Buddhist	0.96	0.75	1.18	1.02
Christain	0.43	0.24**	0.24**	0.28**
Others	0.88	0.45	0.72	0.5
(Family Size) Less than 4 [(r)]				
4	2.93**	2.29*	1.38	2.63**
5	2.97**	1.17	1.6	2.10**
More than 5	3.85***	1.61	2.06	3.29***
(Mother's education) Illiterate and primary level[(r)]				
Middle level	0.87	1.32	1.07	0.9
Secondary and above	0.74	1.85	.60***	.56**
(Father's education) Illiterate and primary level[(r)]				
Middle level	0.6	0.39**	0.77	0.51*
Secondary and above	0.8	0.75	0.89	0.67
(Standard of living)Low[(r)]				
Medium	0.77	0.49	0.53	0.9
High	0.38	0.22**	0.273**	0.43
(Household's Income) Poorest[(r)]				
Poor	0.56	0.14***	0.36***	0.51*
Medium	0.20***	0.10***	0.19***	0.24***
Rich	0.05***	0.03***	0.03***	0.05***

Cont.

Cont..

	Stunted	Wasted	Underweight	CIAF
Background Characteristics	Exp(B)	Exp(B)	Exp(B)	Exp(B)
(Exposed to mass media) No[(r)]				
Low	0.70	1.5	0.95	0.68
High	1.35	2.32	1.31	0.95
Any member take care of child (No one) [(r)]				
Grand Parents	0.44**	1.14	0.7	0.50**
Siblings	0.38	0.64	1.25	0.86
Others	0.44	0.41	0.29**	0.29**
(Type of TG ownership) Public[(r)]				
Private	0.74	0.93	1.13	0.98
(Occupational Combination) Fully dependent on Tea Garden[(r)]				
Partially dependent	1.14	0.89	0.85	1.25
Cox & Snell R Square	0.32	0.21	0.31	0.33
Nagelkerke R Square	0.43	0.33	0.42	0.43

***0.1 % Level of Significance, **0.05 % Level of Significance, *** 0.01 % Level of Significance**

[(r)] Reference category

Source: Computed from field survey data

Appendix 2. Odd Ratio showing Net Effect of Background Characteristics on Nutritional Status of Children among Couples Fully Dependent on Tea Garden for Livelihood				
	Stunted	**Wasted**	**Underweight**	**CIAF**
	Exp(B)	Exp(B)	Exp(B)	Exp(B)
(Current age) Below 25 years[(r)]				
25-30 years	0.61	1.09	1.87	1.02
Above 30 years	0.46	0.66	0.67	0.47
(Age of the child) 12-23 months[(r)]				
24-35 months	0.58	0.63	0.68	0.83
36-47 months	1.34	0.23**	0.64	1.37
48-60 months	2.24	0.20**	1.78	1.58
(Sex of the child) Male[(r)]				
Female	2.43**	1.89	1.62	1.8
(Caste) General[(r)]				
ST	1.73	1.7	2.89	6.15*
SC	0.47	0.61	0.74	0.78
OBC	0.34	0.25*	0.38	0.69
(Religion) Hindu[(r)]				
Buddhist	0.44	0.7	0.41	0.25
Christain	0.15**	0.11**	0.14**	0.07***
Others	0.58	0.39	0.45	0.23
Family Size Less than 4[(r)]				
4	9.10***	1.13	1.33	4.96***
5	12.31***	0.38	2.45	6.17**
More than 5	9.55***	0.73	2.72	8.19***
(Mother's education) Illiterate and primary level[(r)]				
Middle level	0.44	1.5	1.11	0.9
Secondary and above	0.47	0.8	0.67	0.84
(Father's education) Illiterate and primary level[(r)]				
Middle level	0.0***	0.15***	0.37**	0.18***
Secondary and above	0.25**	0.4	0.32**	0.15***
(Standard of living)Low[(r)]				
Medium	0.59	0.38	0.38*	0.91
High	0.16*	0.01***	0.13**	0.18
(Household's Income) Poorest[(r)]				
Poor	0.77	0.07***	0.30***	0.45
Medium	0.07***	0.04***	0.21**	0.16***
Rich	0	0.02***	0.03***	0.01***
(Exposed to mass media) No[(r)]				
Low	0.66	2.11	1.72	0.8
High	2.09	7.578**	1.84	1.15

Cont..

Cont..

	Stunted	**Wasted**	**Underweight**	**CIAF**
	Exp(B)	Exp(B)	Exp(B)	Exp(B)
Any member take care of child) No one[(r)]				
Grand Parents	0.30*	2.46	0.57	0.37
Siblings	0.15**	0.88	0.21*	0.24
Others	0.38	0.7	0.18**	0.2
(Type of TG ownership) Public[(r)]				
Private	0.36**	0.68	0.91	0.56
(Occupational Combination) Both working in TG [(r)]				
Only Husband working In TG	3.46**	0.68	0.87	1.29
Cox & Snell R Square	0.44	0.39	0.34	0.4
Nagelkerke R Square	0.6	0.48	0.45	0.55

***0.1 % Level of Significance, **0.05 % Level of Significance, *** 0.01 % Level of Significance**

[(r)] Reference category

Source: Computed from field survey data

Appendix 3. Odd Ratio showing Net Effect of Background Characteristics on Nutritional Status of Children among Couples Partially Dependent on Tea Garden for Livelihood				
	Stunted	**Wasted**	**Underweight**	**CIAF**
	Exp(B)	Exp(B)	Exp(B)	Exp(B)
(Current age) Below 25 years[(r)]				
25-30 years	0.44*	0.36	0.6	0.49
Above 30 years	1.49	0.74	4.72**	1.23
(Age of the child) 12-23 months[(r)]				
24-35 months	0.76	0.39	1.09	0.59
36-47 months	0.75	0.38	1.3	0.66
48-60 months	1.02	0.27*	0.93	0.5
(Sex of the child) Male[(r)]				
Female	3.14***	2.11	2.05	2.88**
(Caste) General[(r)]				
ST	1.01	0.46	0.25	0.23**
SC	0.72	0.64	0.25	0.49
OBC	0.56	0.84	0.73	0.39
(Religion) Hindu[(r)]				
Buddhist	1.4	1.68	8.04**	3.39*
Christain	0.89	0.44	0.17	0.72
Others	2.24	0.76	1.39	1.54
(Family Size) Less than 4 [(r)]				
4	2.75	5.24*	1.46	3.33*
5	4.53**	2.76	1.64	3.85*
More than 5	4.84**	1.366	1.7	3.62*
(Mother's education) Illiterate and primary level[(r)]				
Middle level	1.61	1.25	2.11	1.26
Secondary and above	0.72	2.21	0.59	0.44
(Father's education) Illiterate and primary level[(r)]				
Middle level	2.32	2.17	5.13	0.95*
Secondary and above	4.44	3.85	9.81	3.59
(Standard of living)Low[(r)]				
Medium	0.98	0.98	0.71	0.77
High	0.36	1.2	0.12	0.42
(Household's Income) Poorest[(r)]				
Poor	0.10***	0.22	0.09**	0.16**
Medium	0.09***	0.12**	0.06***	0.16**
Rich	0.02***	0.03**	0.01***	0.03***

Cont..

Cont..

	Stunted	Wasted	Underweight	CIAF
	Exp(B)	Exp(B)	Exp(B)	Exp(B)
(Exposed to mass media) No[(r)]				
Low	0.77	1.4	0.32	0.71
High	1.33	0.94	0.53	0.83
Any member take care of child (No one) [(r)]				
Grand Parents	0.37	0.56	0.87	0.39
Siblings	0.9	0.28	3.47	1.56
Others	0.07**	0.04**	0.02**	0.039***
(Type of TG ownership) Public[(r)]				
Private	1.53	2.14	2.89	1.86
(Occupational Combination) One working in Tea Garden and other in lower job[(r)]				
One working in Tea garden and other in higher job	0.44*	0.45	0.16***	0.36**
Cox & Snell R Square	0.28	0.16	0.38	0.33
Nagelkerke R Square	0.4	0.31	0.58	0.443

***0.1 % Level of Significance, **0.05 % Level of Significance, *** 0.01 % Level of Significance**

[(r)] Reference category

Source: Computed from field survey data