DETERMINANTS OF FAMILY PLANNING PERFORMANCE IN KERALA, ANDHRA PRADESH, PUNJAB AND UTTAR PRADESH 1971 AND 1981 A DISTRICT LEVEL STUDY

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BY
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CERTIFICATE

This is to certify that this work entitled "DETERMINANTS OF FAMILY PLANNING PERFORMANCE IN KERALA, ANDHRA PRADESH, PUNJAB AND UTTAR PRADESH - 1971 AND 1981 - A DISTRICT LEVEL STUDY" is the bonafide work of Mr. Baljit Singh conducted under my supervision and guidance in the Department of Centre for the Study of Regional Development, Jawaharlal Nehru University, New Delhi-110 067.

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Baljit Singh

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Dated the 14 Aug,,1989

(BALJIT SINGH)

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CHAPTER 1

INTRODUCTION

The population of India has been growing at an alarming pace. The 1981 Census[1] indicated a very high growth and an increase in the absolute number by about three times in thirty years. The growth from 23.83 crores in 1901 to 36.11 crores in 1951, 54.8 crores in 1971 and as much as 68.38 crores in 1981 is an enormous increase by any standard. Desai[2] has observed that over a long historical period prior to 1921, India's population had grown at a very slow pace, presumably due to recurring famines and epidemics which had kept mortality at high level. After 1921, mortality improved rather slowly upto 1951 and rapidly thereafter. In the decade, 1911 to 1921, the depth rate was as high as 47 per thousand and expectation of life at birth only 20 years. The birth rate did not show a compensatory trend. It decreased from the extremely high level of 48 per thousand in 1911-20 to 45 in 1931-40 and 41 in 1951-60. According to the 1981 Census[3], it has decreased to 37 in 1971-80. It is this relative stability of the birth-

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1 Census of India 1981, Series-I: India, Papers 1 to 5, 1981. A resume of the broad results is given in Series-I.

2 Desai, P.B. (1983): Health and Family Welfare in Bose, A. and P.B. Desai (eds.): Studies in Social Dynamics of Primary Health Centre, Delhi, Hindustan Publishing House, pp. 179-200.

3 Registrar General of India: Census of India, 1901-81.

rate in the face of the substantial decrease in the rapid growth of India's population since 1921, and especially since 1951.

The economic consequences of such a phenominal increase in population are pretty serious. The growth of population directly results in increased demand for investible surplus for absorbing the increased labour supply. At the same time, such growth reduces the supply of investible surplus by increasing the consumption demand through rise in the dependency ratio, increased demand for food and other consumer goods, increased demand for housing, education, etc. In view of the fact that India does not have the capacity to mobilise adequate resources to meet the increased demand for consumption as well as jobs, population is deemed to be a problem.

Recognising the problem of population increase, family planning programme drew the attention of the leadership, and to achieve the demographic goals[4] i.e. Net Reproduction Rate = 1 by the year 2000 A.D., Crude Birth Rate as 21 per thousand and Crude Death Rate of 9 per thousand, the financial outlays under the programme have been increasing over the successive Five Year Plans.

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4 India, Government of - Ministry of Health and Family Welfare: Annual Report 1987-88, New Delhi.

Though so much efforts have been made to get results, but still the problem is not tackled, as the Govt. of India's objective[5] was to bring about a reduction in birth rate from 37 to 25 per thousand by 1983. But even this has not been achieved. This objective could be attained only "if[6] about 50 million couples who are in the reproductive age group and already have 3 or more children, limit their family size with 100% effectiveness. But in 1983 only 22.7 per cent could be effectively protected." Further, the progress of family planning have not been uniform within the States. In fact, in several States like U.P., Bihar, M.P., Rajasthan, the current birth rate makes one pessimistic about the future of the family planning in India.

So, the study of the factors influencing family-planning performance assumes a great importance. Such a study is needed to effectively reducing the gap between the better performing and worse performing States. A knowledge about factors that affect the family planning performance will help us to improve the situation in the worse performing States.

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5 Sixth Five Year Plan - Revised Draft, Government of India, Planning Commission, New Delhi, 1978, p.439.

6 Misra, B.D. : An Introduction to the Study of Population: South Asian Publication Private Limited, New Delhi, 1981. p. 305.

The main objectives of the present study is to find out the determinants of family planning performance in two better States, one in North and one in South. The States we have choosen are Kerala and Punjab. We have also selected one State each from North and South where the family planning performance is not good. These States are Andhra Pradesh and Uttar Pradesh. In addition, we have examined the determinants at two time periods, i.e. 1971 & 1981. The specific objectives for the study are

1. To find out the relationship between the socio-economic-demographic and programme input variables with the family planning performance.
2. To suggest measures which could help in increasing the acceptance of family-planning.

The organisation of the study in the ensuing chapters is as follows:

The present Introductory Chapter will be followed by Review of Literature, Conceptual Framework, Analysis of Results and Conclusions.

CHAPTER 2

REVIEW OF LITERATURE

If we go back to the previous literature of this subject, we find that quite a large number of studies have been accomplished to work out the determinants of family planning performance.

Agarwal[1] analyzed Statewise variations in acceptance rates in terms of manipulative (medical plus paramedical personnel per 10,000 eligible couples and expenditure on family planning programme per 10,000 couples) and non-manipulative variables (per capita income, percentage of urban population and percentage of general literacy for age 15 plus). Using the multiple correlation analysis he found that all variables together explained about 87% of the Statewise variations in the average acceptance rate of family planning methods per 100 currently married women between ages 15-44 during 1967-70. The non-manipulative variables explained about 19% of the Statewise variations. The manipulative variables explained about 56% of the Statewise variations and there

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1 Agarwal, S.N. (1972), A study of factors explaining variability in family planning performance in different States in India. Proceedings of 1972 All India seminar on family planning problems in India, International Institute for Population Studies, Deonar, Bombay.

was an overlap of 12% between the two sets of independent variables. Based on his analysis for the acceptance rates during the single years - 1967-68, 1968-69 and 1969-70 - Agarwal concluded that the role of the non-manipulative variables in explaining Statewise variability in acceptance rate goes on decreasing as the programme advances in time, and in the near future manipulative variables will play a significant role in raising the level of acceptance of the family planning programme. The implicit conclusion seems to be that the manipulative variables are more important than the non-manipulative variables in explaining the Statewise variation in acceptance rates. Vig[2] applied the techniques of path analysis for studying the Statewise variations in acceptance of family planning methods during 1966-71. He used six non-manipulative variables and one manipulative variable. Non-manipulative variables considered by Vig include per cent general literacy, per cent urban population, per cent non-agricultural population excluding per cent industrial workers, per cent non-Muslim population and per capita income. Total expenditure on family planning is taken as the programme variable and variation

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2 Vig, O.P. (1972), An application of path analysis to study variation in the acceptance of the family planning performance in India, 1966-71. Proceedings of 1972 All India Seminar of Family Planning Problems in India. International Institute for Population Studies, Deonar, Bombay.

is explained in terms of medical personnel and field staff. Based on his analysis, Vig concluded that general literacy and urbanisation indirectly influences the acceptance of family planning programme. But industrialisation and economic prosperity has a direct influence on the acceptance of programme and that the contribution of the programme inputs in the acceptance of the programme is significant. Misra[3] used regression analysis and analysis of variance to study the differential performance of States with respect to the acceptance of family planning methods. He used three dependent variables: (1) cumulative performance rate of IUD and sterilisation per 1000 population until 1971-72; (2) present eligible couples protected by all methods until 1971-72; and (3) IUD and sterilisation performance during 1971-72 as per cent of eligible couples in each State. The analysis carried out by Misra indicates that (1) about 50% of the variability in all three dependent variables can be explained either by the medical and paramedical personnel per 10,000 eligible couples in 1969-70 or by the expenditure on family planning per 1000 eligible couples in 1968-69, and (2) about 80% of the variability in all three dependent

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3 Misra, Bhaskar, D., (1973), Family Planning: differential performance of States, Economic and Political Weekly, (September 29, 1973).

variables was due to the joint effects of either the manipulative variable (medical and paramedical personnel) with the 'development' variable - per capita income 1964-65 - or the manipulative variable - expenditure on family planning - with the 'development' variable - per capita consumption of electricity in 1968-69. Based on his analysis, Misra concludes that the importance of both these types of influences on family planning performance is supported by the statistical results presented by him. Jolly[4] used regression analysis to investigate the differential performance of the programme at district level for India during 1969-80. According to Jolly, in a situation where the pattern of family services are uniform at the district level, the role of family planning inputs is explaining inter-district variation in the performance of the programme could be very limited. So he focussed attention on the role of various social and economic variables for an idea of factors that explain the differentials in the performance of family planning. Jolly selected 9 social and 7 economic variables. The selected social variables are per cent Hindu population, literacy rate, female literacy rate, per cent urban population, gini ratio, per cent electrified villages,

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4 Jolly, K.G., Family Planning in India. A district level study, 1969-1984. Population Research Centre, Institute of Economic Growth, Delhi.

mean age at marriage - female, per cent of scheduled caste/tribe population and per cent of non-Hindu population at district level. The economic variables are agricultural productivity, population density by gross cropped area, male participation rate, female participation rate, surfaced road mileage, per cent irrigated crops, and per cent commercial crops. Family planning performance has been measured in terms of cumulative acceptance rate, equivalent sterilisation per 100 currently married couples in the reproductive age group and also per cent of couples effectively protected (user rate) in 1980. Jolly concluded that social variables explained variation better than economic variables though both explain statistically significant proportion of variation. Between the two, social variables seem to have a better role to play in raising the level of family planning performance. However, both economic and social variables reinforce each other.

Many of these studies focussed attention on fertility and naturally acceptance of family planning methods was one of the variables. One of the variables that has been extensively examined in connection with acceptance of family planning method is infant mortality rate. Rao[5] did a study on mortality in India in relation to

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5 Rao, S., Krishnaswamy (1970), Mortality in India in relation to prospects of fertility decline. Technical Paper 10, National Institute of Family Planning.

prospects of fertility decline. He found the trends on mortality decline in India and several other Asian countries. He suggested that deliberate attempts of improving infant mortality through effective maternal and child care with family planning efforts may reduce fertility and a viable family planning programme can accelerate an already existing trend of fertility decline as is perhaps true in case of Taiwan, Korea, Hong Kong and Singapore. Menon[6] found that the main reason for resistance to family planning among the rural population is their uncertainty about the future of their infants in India. Likewise, Subhadra Devi[7] analysed a sample of 1498 currently married women in Kerala and found less adoption of contraception due to high infant and child mortality.

In a similar manner, religion is an important social factor influencing the contraceptive behavious of the people. Religious differentials in family planning performance could be due to current moral attitude of the

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6 Krishna Menon, M.K., (1972), Integration of family planning with general health care. The Journal of Family Welfare, Vol. XVIII, No.4; June 1972.

7 Subhadra Devi, V., (1978), Effect of perception of infant mortality on actual family size. Journal of Family Welfare, Vol. XXIV No. 4.

religious community and due to the socio-economic levels of the religious groups. Balakrishna and Narayana Murthy[8] studied a sample of 14 leaders and 3375 non-leaders in the 16 States of India. They found the influence of religion towards family planning in leaders. But Vasanthini[9] in Mysore, found religion as not an inhibiting factor in the acceptance of family planning. In a similar manner, Dandekar[10] studied a sample of 647 married women in Bombay and Hyderabad Stated. They found no religious dogma to disapprove contraception. Some of the studies found Muslims and Christians to be unfavourable towards family planning while others found Muslims, Christians and Parsis to be more favourable. While investigatimg

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8 Balakrishna, S. and Narayana Murthy, M.V. (1968), Some correlates of attitudes towards family planning, Journal of Family Welfare, 15(2):41-58.

9 Vasanthini, R. (1957), Acceptance of family planning in the rural study conducted at Ramanagram family planning centre, Third All India Conference on Family Planning, 120-123; also Journal of Family Welfare, 3:14-19, January-February, 1957.

10 Dandekar, Kumudini (1959), A demographic survey of six rural communities, Gokhale Institute of Economics, Publication 37

a sample of 1000 married couples in Madras, Chandrasekhar[11] found Muslims and Christians to be less interested in family planning. But Majumdar[12] while studying a sample of 1525 low income group women in Kanpur found Muslim and Christian women more anxious for family planning than Hindu and Sikh women. Desai[13] found acceptance level high in Parsi women. Similarly, surveys of family planning clinic or public health centre patients have reported different figures. Sawhney[14] who studied a sample of 175 rural and urban cases who came to the public health centre in Jammu & Kashmir State found only 6 Hindus and the remainder Muslims. But an analysis of 272 vascectomized

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11 Chandrasekhar, S. (1959); Report on survey of attitude of married couples towards family planning in the Puddupakkam area of the city of Madras, Madras; Controller of Stationery and Printing, 35.

12 Majumdar, D.N. (undated), Report on the enquiry into fertility and family planning among a section of married women in Kanpur, Lucknow; Department of Anthropology, Lucknow University, 1955-56 : 45 (mimeographed).

13 Desai, F.R. (1964), Attitude of Parsee mothers towards family planning, Diploma thesis in Social Service Administrati Tata Institute of Social Service.

14 Sawhney, Y.L. and Langoo, P.N. (1969), A study of male sterili sation in Jammu & Kashmir, Family Planning News, 10(1) : 2-5.

cases in Kanpur by Banerji[15] found no Muslims, one Christian and the remainder Hindus.

Many studies have found correlation between the caste and acceptance of family planning. But some other studies did not find any relation between the two. Kale[16] analysed a sample of 527 respondents at Dharwar and found caste significantly associated with the knowledge of family planning. Bhatia[17] in Ludhiana district of Punjab investigated a sample of 50 males, and found upper caste respondents better informed about family planning methods. Sehgal and Pandey[18] in Lucknow district of U.P. in 15 clinics of 6 health centres found that Brahmins were the greatest acceptors of IUCD followed by Ahirs, Parsis and Muslims. But in Ludhiana district of

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15 Banerji, T.P. (1961); A study of male sterilisation at Kanpur, Report on 202 cases of vasectomy, Journal of the Indian Association, 36(12) : 578-580.

16 Kale, B.D. (1969), Family planning resurvey in Dharwar; Institute of Economic Research, Dharwar, 1-29.

17 Bhatia, J.C. (1967), Attitudinal study of rural males in a Punjab village, Family Planning News, 8(7) : 7-9.

18 Sehgal, B.S. and Pandey, M.S. (1967), Acceptance of IUCD by rural women, Family Planning News, 8(3).

Punjab, Wyon and Gordon[19] in their study, found no correlation between caste and level of acceptance of family planning. Rao, Saha and Sadasviah[20] examined a sample of 320 women who underwent tubectomy at Bangalore and found caste not a barrier in adopting this method.

A number of studies have found relationship between education and acceptance of family planning. Wyon and Gordon[21] in several villages of Punjab found that education was related to family planning acceptance.

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19 Wyon, J.B. and Gordon, J.E. (1958), Indo-Harward-Ludhiana population study at Khanna, Punjab. Family planning in India, New Delhi, Directorate General of Health Services, 112-113 P.

20 Rao, H. Krishna, Saha, S.K. and Sedasviah, K: (undated), A follow-up study of tubectomy operations, Family Planning News, 9:15-17.

21 Wyon, J.B. and Gordon, J.E. (1958), Indo-Harward-Ludhiana population study at Khanna, Punjab. Family planning in India, New Delhi, Directorate General of Health Services, 112-113 P.

Som and Sengupta[22] analysing a sample of 1327 households in West Bengal villages and towns, found education to be related with the receptivity for family planning. Phadnis[23] at Nagar, while investigating a sample of 119 patients visiting family planning clinic found relation of education with the acceptance of family planning. But Pisharoti[24] in Athoor Block of Tamil Nadu found in all villages that illiteracy was not a barrier in accepting family planning. A few studies have also reported a positive relationship between education and actual practice of family planning. Sawhney and Langoo[25] analysed a sample of 175 urban and rural cases in Jammu & Kashmir. They found education to be related to the adoption

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22.
Som, R.R. and Sengupta, S. (1960), Survey on opinion of optimum number of children and attitude towards family planning, West Bengal; Instudies in Family Planning, New Delhi : Ministry of Health, P.45.

23
Phadnis, S.P. (1960), Family Planning : Motivation and Methods, Journal of Family Welfare, 7(2) : 10-19.

24
Pisharoti, K.A., Ranganathan, K.V., Sathu, S. and Dutt, P.R. (1971), The Athoor experience : Implications for a State-wise family planning programme, Action Research Monographs; The Gandhigram Institute of Rural Health & Family Planning (4).

25
Sawhney, Y.L. and Langoo, P.N. (1969); A study of male sterilisation in Jammu & Kashmir, Family Planning News, 10(1):2-

of family planning methods. Likewise, Bhatia[26] in the villages of Punjab analysed a sample of 50 males. He found education to be related with knowledge and practice of family planning.

Female education plays an important role in the acceptance of family planning methods as education can raise the age at marriage as well as provide better employment opportunities which in turn may help to clear the mist of ignorance about family planning methods. Majumdar[27] examined a sample of 1525 low income women among a section of married women in Calcutta. He found education to be related to the acceptance of family planning. Muthiah[28] did a study on Termination rates and other contraceptive use of IUCD acceptors in Athoor Block in Gandhigram. He calculated the termination rates

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26
Bhatia, J.C. (1967), Attitudinal study of rural males in a Punjab village, Family Planning News, 8(7) : 7-9.

27
Majumdar, D.N. (1955), Family and marriage in a polyandrous Society, Eastern Anthropologist, 8(2).

28
Muthaiah, A. (1970), Termination rates and other contraceptives use of IUD acceptors in Athoor block, Bulletin of the Gandhigram Institute of Rural Health and Family Planning, 5(2) : 37-49.

by the multiple decrement life-table developed by R.G. Potters to estimate net rates of device, taking a sample of 80.8% of total IUCD acceptors, 434 in Athoor Block who had got it terminated and of 541 regarding pre-insertion contraceptive use and 434 women with post-termination contraceptive use. He found education to be highly related to acceptance of IUCD. Similarly, Mohapatra[29] did an oral pill pilot project in India where independent samples were drawn from clinics located in States and Union Territories of pill acceptors at the end of May 1969, and found education to be related to acceptance of pill. But some studies showed no relationship between the female education and acceptance of family planning. Chitre[30] in Kaira district of Gujarat examined a sample of 1000 women. He found that about 90% of the women undergoing tubectomy were found to be illiterate. Mehlmann and Bareja[31] in Allahabad, analysed 1634 cases of

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29
Mohapatra, P.S., Sugathan, T.N., Sharma, B.B.L. and Mehra, Leila (1971), The oral pill pilot project in India : Report of an acceptor follow-up study, National Institute of Family Planning, New Delhi.

30
Chitre, K.T. (1963), Acceptability of contraceptive methods in Maharashtra State, Family Planning News, 4(7):138-140.

31
Mehlmann, M.M. and Bareja, Raj (1968), A two year experience with loop in 1634 cases, Family Planning News, 9(5) : 2-4.

IUCD and found no relation between education and ac of IUCD.

Many studies have shown a positive relationship between the economic status and adoption of contraception. Indian Institute of Public Opinion[32] analysed 400 women cases in the city of Calcutta and 100 women in villages just outside the city and found income highly related to acceptance of family planning programme. Poti, Malaker and Chakravorti[33] did an enquiry into the prevalence of contraceptive practice in Calcutta city (1956-57) by following a questionnaire method. It was divided into three parts, i.e. household, husbands and wives. The husbands and wives were contacted by the male and female investigators to complete the respective schedules (first two schedules from the husbands and the third from the wives), on a master sample of 6884 couples, 1018 couples were selected at random. It was found that with the high economic status practice of contraception increases. Sarpuria[34] through a

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32
Indian Institute of Public Opinion (1958), The measurement of the knowledge of family planning among Indian women, a study in the city of Calcutta, Monthly Public Opinion Surveys, 4(3).

33
Poti, S.J., Malaker, C.R. and Chakravorti, B. (1959), An enquiry into the prevalence of contraceptive practices in Calcutta city (1956-57), Sixth International Conference on Planned Parenthood.

34
Sarpuria, Shantilal (1964), Attitude towards family planning in a small urban community, Indian Journal of Social Work, 25(1):79-87.

interview, collected data for 217 males in Jaipur and concluded that higher income groups were more inclined towards family planning. Bhogle and Kaur[35] did a study on adoption of family planning in two industrial settings in Bombay and Hyderabad. An interview schedule was prepared. They examined a sample of 250 workers out of 500in each factory living with their wives. They found income positively related to adoption of family planning programme. Similar type of results were found in other countries. Whelpton and Rainwater[36] infer from their studies that in the United States the lower class people have more children than the middle and upper class people, which is due to insufficient and ineffective use of contraceptives. Carvajal and Gaithman[37] found that not only does the use of contraception tend to

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35 Bhogle, Shalini and Kaur, Surjit (1972), Adoption of family planning in two industrial settings : A comparative study, Council of Social Development, New Delhi.

36 Whelpton, P.K. et al (1966), Fertility and family planning in U.S.A. Princeton : Princeton University Press,New Jersey.

37 Carvajal, M.J. and David. T. Gaithman (1976); Family planning and family size determination. The evidence seven Latin American cities, , Gainesville: The University Press of Florida.

increases with the level of income, but also adoption of more sophisticated contraceptive techniques are adopted among the higher income groups. But some studies revealed no relationship between the acceptance of family planning and economic status. Singh[38] in Pune analysed 800 cases and found that low income group was also found to accept family planning. Agarwal[39] examined a sample of 31 teachers of Lucknow University and found no relationship between the economic status and acceptance of family planning.

Many studies showed a negative relationship between the female participation in the labour force and family planning acceptance, as female participation in economic activities leaves less time for child-care and raises the opportunity cost of children. Singh[40] conducted a survey through home visits in 26 villages near Lucknow.

38
Singh, Amrit W. and Gunde, Suman B. (1962), Analysis of couples following family planning on advice of regional family planning training centre, Poona, Journal of Family Welfare, 9(2):7-19.

39
Agarwal, S.N. (1968), A follow-up study of intrauterine contraceptive devices: An Indian experience, Eugenics Quarterly, 15(1):41-50.

40
Singh, Baljit (1960), Five years of research in family planning in the countryside, Lucknow, J.K. Institute of Sociology and Human Relations (mimeographed).

He examined a sample of 1453 married females out of 1904 married females, and found occupation as a significant variable in adopting contraception.

Nursert H. Fisek and C. Shorter[41] did a study on fertility control in Turkey. They found that 64% of women who are currently earning wages expressed interest in family planning in contrast to 40 to 44 per cent of the self-employed and housewives. Naidu[42] in 8 villages of Hyderabad prepared an interview schedule and rates the knowledge into low (knowing one method) medium (2 methods) and high (more than 2 methods). Taking a random sample of 307 males aged 21-60 with wives in age group 15-45 and at least one living child, Naidu found occupational background to the knowledge and practice of family planning. Korean Institute of Family Planning[43] found that women currently working are

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41
Fisek, N.H. (et el) 1968, Fertility control in Turkey. Demography - 5(2) : 578-89.

42
Naidu,N.Y. (1971), Knowledge and approval of family planning as correlated to some characteristics of rural respondents, Journal of Family Welfare, 18(1).

43
Korean Institute of Family Planning (1979), The 1976 national fertility and family planning survey, KIFP, PP (153-190).

more likely to be practising contraception than employed women. But the type of work also plays an important role in family planning acceptance. For example, Jha, Chire and Lohe[44] analysed a sample of 100 sweeper women and 100 white-collar women and found that white-collar women had better knowledge of and more favourable attitude towards family planning than sweepers. As regards the method of family planning it was found that lower occupational groups were practising it later. Kadirappa, Rao and Susheel[45] investigated a sample of 132 acceptors of IUCD in Mysore and found that over 50% of the husbands were cultivators.

Although a large majority of the population lives in rural areas, urban areas in the country are expanding and most of the organised national life is emerging in urban areas. Urbanisation effects the contraception in the sense that it is expected that urban residents will be less traditional minded and less subject to village taboo and religious practices. Further, the difference in family

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44 Jha, Saroj.S., Chitre, Vijaya.M. and Lohe, Leela, P. (1969): Family planning attitudes and practices in women. A study in two groups; Journal of Family Welfare, 16(1) : 10-24.

45 Kadirappa, K., Narhari Rao, C.S. and Susheel, U.S.(1968), IUCD acceptors in rural areas around Ramanagaram, Family Planning News, 9(16).

practices in rural and urban areas may be caused by the level of education, exposure to mass media, organised institutions in urban areas and the pressure of urban life. Dandekar & Dandekar[46] analysed a sample of 511 females and 850 males from one city, 240 females and 855 males from a rural area and found practice of family planning greater among urban than rural males. Savani and Dandekar[47] examining 5 villages and 3 towns in Bombay State with 4013 males and 6752 females respondents found knowledge, attitude and practice more in urban areas. Indian Institute of Public Opinion[48] found knowledge and practice of family planning greater among urban groups.

46
Dandekar, V.M., Dandekar, K. (1953), Attitudes towards family planning and limitation, Survey of fertility and mortality in Poona district, Gokhale Institute of Politics and Economics, 115-187.

47
Sovani, N.V. and Dandekar, K.(1955), Fertility survey of Nasik, Kolaba and North Satara districts, Gokhale Institute of Politics and Economics, Poona.

48
Indian Institute of Public Opinion (1958), The measurement of knowledge of family planning among Indian women, a study in the city of Calcutta, Monthly Public Opinion Surveys 4(3).

Majumdar[49] in Howrah district examined data from three clinics situated in urban, rural and slum areas, and found that the use of pill was greater in urban areas than in rural or slum areas. Das[50] in the rural and urban areas of Baroda examining 1219 males and 1422 females from urban Baroda, 982 males and 975 females from rural Baroda, found urban-rural differences in the knowledge and practice of family planning. Similarly, Mehra, Mohapatra and Sharma[51] investigated 9000 women accepting the pill from India found 75% acceptors as urban. But Pathe[52] in a few villages and urban Blocks of Kolhapur found both the urban and rural respondents to practise family planning.

Mass media communication plays an important role in the family planning programme which includes newspapers,

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49
Majumdar, B.C. (1972), Use of oral contraceptives in urban, rural and slum areas, Studies in family planning, The Population Council, 3(9):227-232.

50
Das, N.P. (1972), Factors related to knowledge, family size preference, practice of family planning in India, Journal of Family Welfare, 19(1).

51
Mehra, Leila, Mohapatra, P.S. and Sharma, B.B.L. (1970), A report on the oral pill pilot project clinics in India, New Delhi, Central Family Planning Institute, Technical Paper No.9.

52
Pathe, Vasant, P. (1962), Practice of contraception and attitudes towards family planning (findings of a sample survey) AICC Economic Review, January 4.

films, radio, television, etc. Newspapers have been used in a number of ways by the Family Planning organisation through public relation method, for advertisements ranging from a few lines in classified sections to full page advertisement, in advertising campaigns to support the commercial distribution of contraceptives. The advantages of newspapers are that they are highly visible media, often considered authoritative, have a predetermined audience based on circulation patterns, and even have secondary readership. Sweeney[53], on the basis of the studies conducted in 22 countries concluded that advertisements in newspapers offer material for contraceptives, are sufficiently successful to warrant continuing family planning programmes in India, Sri Lanka and Taiwan. In Japan, the first survey conducted by the Mainichi group of Newspapers showed that 60% of the respondents approved of contraception and about 20% were practising contraception. By 1963, 90% recognised the concept of planned births and practice rate was 44%. But Indian Institute of Public Opinion[54] estimated that 60% of

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53
Sweeney, W.O. (1977), Media communications in population/family planning programmes : A review, population reports J(16) : 294-303.

54
Indian Institute of Public Opinion (1964), Family Planning - A survey of awareness and practice of family planning, Monthly Public Opinion Surveys, 9(6 and 7).

the rural population do not read newspapers. Chandrasekhar and Kuder [55] found the role of newspapers not significant in disseminating information about family planning. But after three years, Indian Institute of Public Opinion[56] conducted an other survey in 1967 and found that one out of every seven respondents reported the newspaper as a source of information about family planning. Dubey[57] in a study of Delhi also found newspaper to be a significant source of information about the IUCD. Vasa[58] also found newspaper to be an effective medium in motivating people to adopt family planning. In a similar manner, the volume of film materials in the family planning area is considerable. As a medium, film has many

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55
Chandrasekharan, C. and Kuder, Kalherine (1965), Family planning through clinics, Bombay, Allied Publishers, 225.

56
Indian Institute of Public Opinion (1967), Family Planning, Monthly Public Opinion Surveys, 9(6 and 7).

57
Dubey, Dinesh C. and Choldin, Harvey, M. (1967), Communication and diffusion of the IUCD:A case study in urban India. Demography 4(2):601-614.

58
Vasa, Sumati (1967), IUCD and its different aspects: A study of 400 cases, Family Planning News, 8(10).

advantages including the impact of a full audio and visual presentation and have the capacity to present a large amount of information in a relatively short period of time. Sweeney[59] reviewing the studies related to films found that large number of people attend the movies, in particular in Hong Kong, Iran, Phillippines and Taiwan. In India, movie goers are largely urban and middle class population. Radio among the first media used in family planning is specially important due to its capacity to reach our great geographical distances and to convey information to illiterate people. Park[60] in a post campaign survey conducted in Korea, infers that radio is a first source of information. Kerlin and Ali[61] found radio messages effective in motivating people to take advantage of available community services and in stimulating

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59
Sweeney, W.O. (1977), Media communications in population/family planning Programme: a review, population reports : J (16) : 294-303.

60
Park, H.J. (1967), "Use and relative effectiveness of various channels of communications in the development of the Korean family planning programme" in Report of the working group on Communication aspects of family planning programmes and selected papers. Bangkok : UN, ECAFE.

61
Kerlin, B. and S.M. Ali (1968), The use of the radio in support of the family planning programme in Hyderabad district of West Pakistan. Pakistan Journal of Family Planning, 2(2):1-31 July, 1968.

discussions about family planning in rural and urban communities of Pakistan. Similarly, the Ford Foundation[62] in Nigeria found radio as the prime source of family planning information. Patel[63] studied the impact of two radio broadcasts in family planning among 181 couples of a village in Ahmedabad and found that 25 to 50% of the sample had heard the two broadcasts on family planning and each listener on an average reported discussing with at least 6 persons about family planning. This study also highlighted the usefulness of providing family planning information through the more popular programmes like Vividh Bharati, Radio Ceylon, etc. But Bhende[64] in her study on the impact of radio broadcast on IUCD, interviewed 240 women both before and after they listened to the single radio broadcast on family planning. Of the women studied, only 28% report to have heard the broadcast. Of these, 72% heard the complete programme and 28% only a part of it. But still mass media plays an important role in making the people to accept the family planning programme.

62
Ford Foundation, Lagos (n.d.) Family Planning Council of Nigeria, Personal Communication to W.O. Sweeney, P.16.

63
Patel, V.M. (1968), A study of the effectiveness of the radio as a medium of communication, The Journal of Family Welfare, 14(3).

64
Bhende, Asha (1968), Follow-up study of IUCD acceptors, five years of research in family planning, Bombay: Demographic Training & Research Centre (mimeographed).

Family Planning performance also depends upon the availability of medical facilities, as medical facilities in terms of hospitals, family planning clinics serve as a sources of information about family planning, conducting vasectomy campaigns, organising family planning programmes, etc. Rao[65] studied 70 women attending the family planning clinics of Irwin Hospital, New Delhi. Taking interviews with a questionnaire, he found hospitals and clinics as a good source of information about the IUCD. Chowdhary[66] found hospitals as the main source of knowledge for rural women. Rao[67] found clinics helping the clients in selecting a proper contraceptive. In a study on client's views on

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Rao, Kamala Gopal (1965), An explanatory study of IUCD acceptors; Family Planning News, 6(12):17-20.

66
Chowdhry, Prasanth (1965), Report on a study of general attitude towards family planning in West Bengal: Public preferences surveys, Technical Notes No. 31, Calcutta, Indian Statistical Institute.

67
Rao, Kamala Gopal (1965), An explanatory study of IUCD acceptors, Family Planning News, 6(12) : 17-20.

family planning practices, in a comparative study of family practices of people attending the two clinics, Sang_Kungi[68] found that the clinics assisted the patients to form preference for different contraceptive methods. Chandrasekharan, Kuder and Katherine[69] evaluated the response of the public for the 12 family planning clinics in Bombay where they found organisation, location of the clinic, its timings, staffing, to be efficient in the operation of the family planning programme through clinics. Bhende[70] assessed the IUCD services offered by a family welfare centre in Bombay. About 452 women availing themselves of the services of the clinics were interviewed. Only 12% reported dissatisfaction with the services of the Centre, mainly due to lack of proper management of complaints. Another important reason mentioned by the respondents was the rude behaviour of the doctors and their reluctance to remove the IUCD despite severe side-effects. However, 10% of the women who did not revisit the clinic maintained that dissatisfaction was not the reason for discontinuation of

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68 Sang-Kungi, C. (1968), Clients' views on family practices, unpublished dissertation; Tata Institute of Social Sciences.

69 Chandrasekharan, C. and Kuder, Katherine (1965), Family planning through clinics, Bombay: Allied Publishers, 225.

70 Bhende, Asha (1968), Follow-up study of IUCD acceptors, five years of research in family planning, Bombay: Demographic Training & Research Centre (mimeographed).

visits to the clinic. Dandekar's[71] study indicated that the family planning clinic may not be a very effective medium of communication. The study experimented on communication and revealed that discussion regarding family planning with women patients required aptitude and skill, which were not necessary for an otherwise effective medical personnel. Information given during the period of confinement was not effective and personal contacts were lacking.

The role of physicians in family planning acceptance is highlighted in many studies. As the medical profession enjoys a high status in the society, people tend to be influenced easily by the physician and to accept family planning or develop attitudes towards it. Since doctors continuously interact with human beings, his or her advice tends to penetrate more deeply into the minds of the people. Phadnis,[72] in a study of 119 patients who visited the family planning clinic at Nagpur, found 72 patients who stated that they were directed by a physician. Likewise, the survey by the family planning unit of the

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71
Dandekar, Kumudini (1967), Communication in family planning, Bombay, Asia Publishing House, 56-104.

72
Phadnis, S.P. (1960), Family Planning: Motivation and Methods, Journal of Family Welfare, 7(2) : 10-19.

Indian Statistical Institute[73] conducted in the urban areas in and around Calcutta found the physician, to be the main source of family planning. Central Family Planning Institute[74] on 70 cases of IUCD, found physicians to be one of the chief sources of information. Anand[75] at the Lady Hardinge Medical College, New Delhi found that the entire group of house-surgeons did not feel competent to discuss family planning with the patients and referred very few people to family planning clinics.

The research on the role of nurses in promoting family planning is comparatively less. The paucity of efforts in this area is reflected by the fact that studies conducted even recently have attempted to assess the knowledge, attitude and practice of family planning among the nursing personnel. While studying the attitude

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73 Indian Statistical Institute (1967), Calcutta; A study of the attitude towards family planning in West Bengal : Public preference surveys, 1962-63, paper presented at Family planning communication and action research workshop, University of Kerala, April, 1967.

74 Central Family Planning Institute (1966), An exploratory study of IUCD acceptors, Fourth communication action research workshop, Lucknow.

75 Anand, D (undated), Role of house-surgeons in family planning through hospital care; Reports of the family planning communication action research project, Part III, Lady Hardinge Medical College, New Delhi (mimeographed).

towards and perception of family planning of 50 nurses at Chandigarh, Abraham[76] found the family planning practices to be unpopular even among the nursing personnel. Usha Lal and Mathur[77] studied 199 cases of nurses at Ajmer including the nurses under training. They found that only 77% of the nurses could explain the meaning of family planning. The report of the Indian Nursing Council[78] based on the survey of 150 nurses, health visitors and Auxiliary nurse mid-wives working in public health centres and hospitals, indicated that there is a great scope for the nurses to impart family planning instructions in the hospitals. These studies reveal that nurses in India at present seem to be less well-equipped to do family planning and that more training and experience is required for them in the knowledge and techniques of family planning.

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76 Abraham, A. (1967), Aptitude and perception study of nursing personnel; Family Planning News, 8(7) : 10.

77 Lal, Usha and Mathur, G.M. (1972), Knowledge, ttitude and practice of family planning among nursing staff; The Journal of Family Welfare, 19(1).

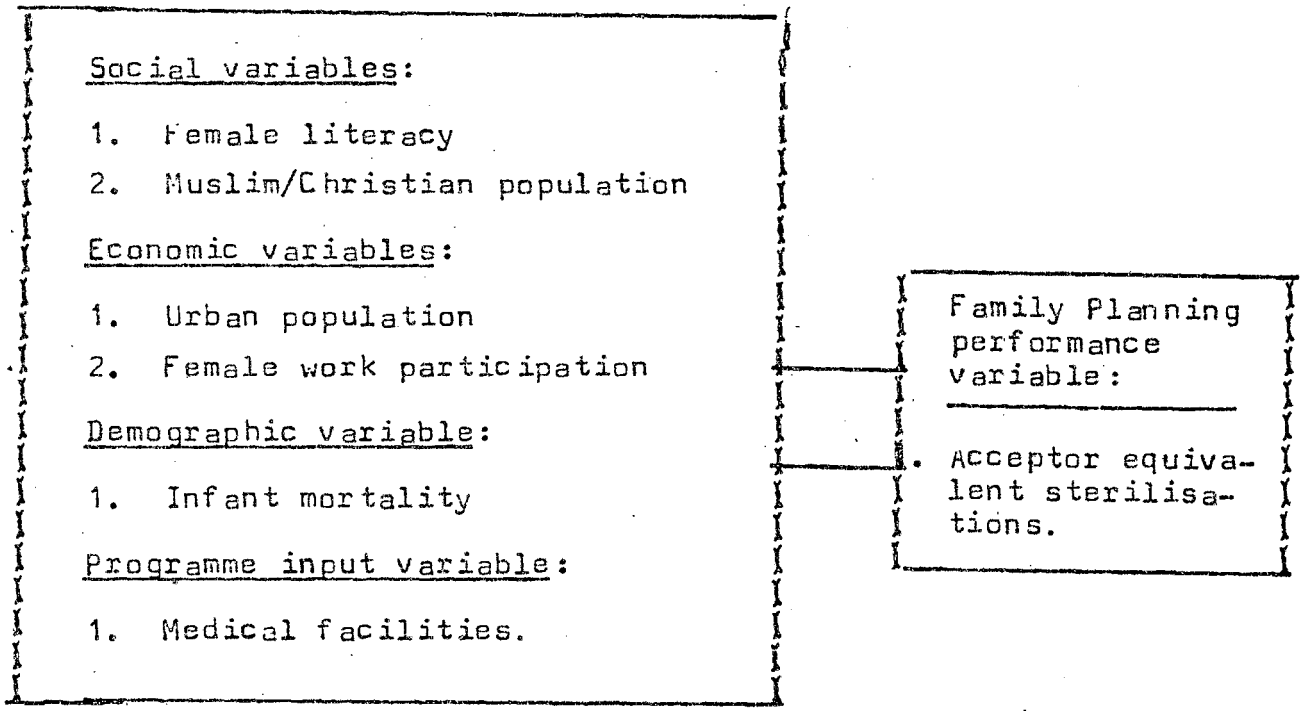
78 Indian Nursing Council (1967), Report of the Family Planning Communication Action Research Project; Paper presented at the Fifth Workshop on Communication Action Research, Central Family Planning Institute, New Delhi.

The above Review suggests that many variables are important in explaining acceptance of family planning programme. Though most of these variables have been studied at the level of a couple, rather than district, the variables can be used for studying district level performance. However, we cannot take into account all the variables that have been presented in this Review of Literature because of the lack of availability of data. So, we have selected only a few variables for analysing family planning performance at a district level.

CHAPTER 3

CONCEPTUAL FRAME-WORK

Empirical analysis[1] can be proceeded only in terms of an explicitly conceptual frame-work. Such a frame-work will help us to formulate the effect of various factors that affect the family planning performance on the basis of a theoretical and logical conception of the underlying casual chains, as shown below. The frame-work could be verified empirically and the results interpreted quantitatively. The frame-work answers, that to what extent does the family planning performance depend upon the various socio-economic, demographic and programme input factors/variables.



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[1] Srikantan, K.S., Family planning programme in the socio-economic context. The Population Council, (1977).

How the socio-economic-demographic and programme input variables effect the family planning programme is discussed below.

1. Female literacy:

Female education plays an important role in the acceptance of family planning methods, as education can raise the age at marriage as well as provide better employment opportunities which in turn may help to clear the mist of ignorance about family planning methods.

2. Muslim/Christian population:

"Religious affiliation[1] has considerable theoretical bearing on family planning performance. Religious differentials in family planning performance are largely a function of two broad factors, i.e. (1) the current moral attitude of the religious community (2) the socio-economic levels of the religious groups." In Islam, sexual intercourse in marriage is only for procreation of children. Any artificial interference with the natural process of coitus and conception is contrary to the laws of God. Further, children are considered to be the gift of God. While in Christianity, birth control is permitted and is at the discretion of the couple. Although religion is an important variable determining contraception, but we do

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1. Westoff, Charles F. 1959, "Religion and fertility in metropolitan America." in thirty years of research in human fertility: Retrospect and Prospect. Annual Conference of Milbank Memorial Fund, October 22-23, 1958, New York.

realise that religion is simply no longer an important determinant in a modern society; other variables or characteristics such as education, residence status and occupation are the over riding variables which effect the contraception of both the Muslims and Christians in respect of their socio-economic status. Thus, the Muslims are less inclined towards family planning than the Christians.

3. Urban Population:

In a district where more number of persons are living in urban areas, then one can expect high family planning performance. In the urban areas, child is a source of non-economic benefits and parents do not expect economic support from children. But in the rural areas, the benefits from the children are more because they serve as a form of social insurance in the absence of social security programmes. This is because in the urban areas children are generally sent to schools and in rural areas such educational facilities may not exist.

4. Female Work Participation:

Female participation in the labour force has been considered one of the means of promoting the use of contraception, as work[2] outside the home delays the age at marriage and also increases the probability of non-marriage for some women because of enhanced economic

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[2] United Nations 1975, Status of women and family planning, New York: United Nations E/CN.6/575/Rev:, Sales No.E.75,IV.5.

self-sufficiency. Further,[3] "every additional child increases the opportunity cost of a working mother in terms of foregoing income by staying home and by not participating in the labour force at least for some time during pregnancy and after. This indirect cost or opportunity cost has a negative bearing on the decision of a working wife to have an additional child."

5. Infant Mortality:

A vital factor which militates against acceptance of the small family norm by reproductive couples is the uncertainty about their child's survival. A decline in the infant mortality reduces the number of children required to achieve a given family size and increases motivation to practise birth control. So long as we are unable to ensure a reasonably high chance of survival of the child, and so long as the common man has a strong desire for a large family - for valid reasons such as brighter chances of economic gains and old-age security, for example, - a small family norm is not likely to succeed.

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3 Blake, JUDITH, 1965, "Demographic science and the redirection of population policy," in Public Health and Population Change: Current Research Issues, edited by M.C. Sheps and J.C. Ridley, Pittus Burgh: University of Pittusburgh Press, pp.41-69.

6. Medical Facilities:

Family planning performance depends upon the availability of medical facilities, for example, if the number of beds available in the hospitals is sufficient, people will be more receptive to the family planning practices, as for sterilisation, proper bed facility must be given. This provides a type of security to the clients that they will be looked after well in the hospitals. Further, distance between the house and availability of medical facilities in terms of hospitals, dispensaries, welfare centres, primary health centres will effect the family planning performance. The lower the distance between the two, the higher will be the performance. Moreover, family planning performance depends upon the consideration shown by the health staff, effectiveness of the medical service provided for the treatment, extent of patient's satisfaction with health care and waiting time in the centres, etc.

Hypotheses:

Based upon the above conceptual framework, following hypotheses have been framed:

(1) Those districts where the female literacy is high, family planning acceptance is high.

(2) Districts which have more percentage of Muslim population, there family planning acceptance will be less, and where the Christian population percentage is more, there family planning performance will be high.

(3) Districts which have higher percent of urban population will be better in terms of family planning performance.

(4) Where female participation in the economic activities are more, there the family planning acceptance will be high.

(5) The districts where the availability of medical facilities are more, there the family planning performance will be better.

(6) The districts having a lower infant mortality, will have a higher family planning acceptance.

Methodology:

To study the relationship between the dependent and independent variables we have used the correlation technique which gives us an idea about the size and direction of the relation between the variables. Since the simple correlation analysis explains only the relationship between the two variables at a time we have also used the step-wise multiple regression analysis. Step-wise regression procedure helps in observing the effects of adding independent variables in a systematic way. In such a programme, the analyst inputs data for a set of independent variables. The computer first selects the independent variable that results in the greatest reduction of unexplained variation and runs a simple regression. Then under operator control, it performs successive regression analysis by adding one or more variable to each run. The variable added is the one that offers the greatest additional reduction of the unexplained variation. The programme continues until all variables in the set have been included, or until none of the remaining variables can make a significant reduction in the unexplained variation.

Multiple regression analysis ascertain the relationship between the dependent and independent variables. A multiple regression equation is one, where the number of independent variables are more than one. The equation would be

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3,$$

Where,

Y is the dependent variable,

a is the intercept term,

x_1, x_2 and x_3 are the independent variables, and

b_1, b_2 and b_3 are the coefficient for independent variables.

Thus, the coefficients b_1, b_2 and b_3 measure the degree of variation in the dependent variable associated with variation in each independent variable i.e. $b_1 = Y/ x_i$. These coefficients are estimated in the computer programme as the coefficient of determination, R^2 which measures the proportion of variation in the dependent variable associated with variation in the independent variables. The value of R^2 may range from 0 to 1. A value of 0 indicates that there is no relationship between the dependent and any of the independent variables. A value of 1 would mean that all the variation in dependent variable is explained by simultaneous variations in the independent variables. So if the value of R^2 is high, we say that there is high correlation between the dependent and independent variables and vice versa.

We have also used F-test and t-test to find out the significance. F-statistics provides a measure of the ratio of explained variation (in the dependent variable) to unexplained variation. To test whether overall equation is significant, we compare the value for the F-statistic with critical F-value. If the value for the F-statistic exceeds the critical F-value, we can say that the regression

equation is statistically significant at the specified confidence level. But this test does not imply that all the variables are significant. To know this, the individual variables are tested by means of the t-test. The t-test requires only that we compare the t-test ratio with the critical t-value for our desired level of significance. If the t-test ratio is greater than the t-value from the table, we say that the variable is significant at a particular level of significance.

Variables: Measurement and Sources of Data

In this study, in all seven variables which comprise six independent and one dependent variable, have been used. Table-1 gives the variables for which data has been compiled. The independent variables have been grouped into four categories according to the type of variables. These categories are - (1) Social variables; (2) Economic variables; (3) Demographic variables; and (4) Programme input variables.

Under Social variables, we are considering per cent female literacy and per cent Muslim/Christian population. Per cent urban population and per cent female work participation has been considered as Economic variables. The Demographic variables include only infant mortality rate. Per cent medical facilities have been taken as programme input variables.

The dependent variable is referred as the performance variable which includes the equivalent sterilisation.

TABLE-1 : Variables used in the Study

Type of variables	Description of variables	Measurement of variables
Social	1. Female literacy	$\frac{\text{No. of female literates}}{\text{Total female population}} \times 100$
	2. Muslim/ Christian population	$\frac{\text{Muslim/Christian population}}{\text{Total population}} \times 100$
Economic	3. Urban population	$\frac{\text{Urban population}}{\text{Total population}} \times 100$
	4. Female work Participation	a) $\frac{\text{Total female workers (main activity)}}{\text{Total female population}} \times 100$
		b) $\frac{\text{Total female workers (main workers plus marginal workers)}}{\text{Total female population}} \times 100$
Demographic	5. Infant mortality	$\frac{\text{Infant deaths } 0\text{-}1}{\text{Total life berths}} \times 1000$
Programme input	6. Medical facilities	$\frac{\text{No. of medical institutions}}{\text{No. of inhabited villages}} \times 100$
Performance	7. Equivalent sterilisation	Sterilisations + IUDs/3 + Conventional contraceptive users/18
		Sterilisation: $\frac{\text{No. of Str.performed}}{\text{Total currently married couples, 15-44 years}} \times 100$
		IUD: $\frac{\text{No. of IUDs inserted}}{\text{Total currently married couples, 15-44 years}} \times 100$
		Conventional contraceptive users: $\frac{\text{No. of C.C.users}}{\text{Total currently married couples, 15-44 years}} \times 100$

Sources of data: 1971

Variables	Sources
1) Percent female literacy	a) District Census Hand Books of 1971 for i) Kerala; ii) Andhra Pradesh; and iii) Punjab. b) Statistical Abstract of Uttar Pradesh 1973-74.
2) Percent Christian/ Muslim population	Census of India, 1971. Series 1. India. Paper 2 of 1972, for i) Kerala; ii) Andhra Pradesh; iii) Punjab; and iv) Uttar-Pradesh.
3) Percent urban population	a) District Census Hand Books of 1971 for i) Kerala; ii) Andhra Pradesh; and iii) Punjab. b) Statistical Abstract of Uttar-Pradesh 1973-74.
4) Female work Participation (main activity)	District Census Hand Books of 1971 for i) Kerala; ii) Andhra Pradesh; iii) Punjab; and iv) Uttar-Pradesh.
5) Infant mortality	Vital Statistics of India 1971, Office of the Registrar General of India, Ministry of Home Affairs, New Delhi, for i) Kerala; ii) Andhra Pradesh; iii) Punjab; and iv) Uttar Pradesh.
6) Percent villages with medical facilities.	Census of India, Occasional Paper of 1986. Study on Distribution of Infrastructure facilities in different regions and levels and trends of urbanisation.
7) Equivalent sterilisation	'Family Planning in India' 1969-1984, A District Level Study by K.G.Jolly.

Sources of data: 1981

Variables	Sources
1) Percent female literacy	a) Statistics for Planning, 1983. Directorate of Economics and Statistics, Government of Kerala.
	b) District Census Hand Books of Andhra Pradesh, 1981
	c) Statistical Abstract of Punjab, 1986.
	d) Statistical Abstract of Uttar Pradesh, 1983-84.
2) Percent Christian/ Muslim population	a) Census of India, 1981. Series 10, Kerala. Paper 1 of 1985. Household Population by Religion of Head of Households.
	b) Census of India, 1981, Series 2, Andhra Pradesh. Paper 1 of 1985. Household Population by Religion of Head of Households.
	c) Census of India, 1981. Series 17, Punjab. Paper 1 of 1984. Household Population by Religion of Head of Households.
	d) Census of India, 1981. Series 22, Uttar Pradesh. Household Population by Religion of Head of Households.
3) Percent urban population	a) Census of India, 1981. Series 10, Kerala, part II-A, General Population Tables.
	b) District Census Hand Books of Andhra Pradesh, 1981.
	c) Statistical Abstract of Punjab 1986
	d) Statistical Abstract of Uttar Pradesh 1983-84.

4) Female work participation (main plus marginal workers)	a) Census of India, 1981, Series 10. Paper 2 of 1988, supplement to paper of 1981, provisional population totals, Kerala. b) District Census Hand Books of Andhra Pradesh, 1981. c) Statistical Abstract of Punjab, 1986. d) Primary Census Abstract, Series 22, Uttar Pradesh . Census of India, 1981.
5) Infant mortality	Child Mortality Estimate of India, 1981. Occasional papers No.5 of 1988, Demographic Division, Office of the Registrar General of India, Ministry of Home Affairs,New Delhi, for Kerala, Andhra Pradesh, Punjab and Uttar Pradesh.
6) Villages with medical facilities.	a) "Women in Kerala", Trivandrum, 1984, page 77. Department of Economics and Statistics. b) District Census Hand Books of 1981 for i) Andhra Pradesh; ii) Punjab; and iii) Uttar Pradesh.
7) Equivalent sterilisation	'Family Planning in India,1969-1984, A District Level Study by K.G.Jolly.

A Brief Description of the Study Area:

In this study, we have selected two Southern States and two Northern States for analysing family planning performance. The two Southern States that have been selected are Kerala and Andhra Pradesh, while the two Northern States are Punjab and Uttar Pradesh. The selection of these four States has been based upon Crude Birth Rate and Family Planning Performance. To choose, two States from South, and two from North, the average Crude Birth Rate (1970-79) for the States have been worked out from yearly Crude Birth Rate from various Family Welfare Programme in India Year Books 1972-73 to 1980-81 as shown in Table-2. The States and Union Territories are classified into high CBR States (having CBR above 34), high middle CBR States (having CBR higher than 32.6, but lower than 34), low middle CBR States (having CBR higher than 29.3, but lower than 32.6), low CBR States (CBR lower than 29.3). From the Southern States, Kerala has been taken from the low CBR States Category, and Andhra Pradesh from the high middle CBR States. In case of Northern States, Punjab has been taken from the low middle CBR States, and Uttar Pradesh from the high CBR States category.

In terms of family planning performance, Table-3 shows that the performance of Kerala State is better than that of Andhra Pradesh in 1969-70 and 1981-82, in terms of per cent couples effectively protected. Similarly, Punjab is doing well in both the time periods as compared to Uttar Pradesh.

TABLE 2 : Average Crude Birth Rate-- 1970-79 for the States/Union Territories of India

States in Different Categories	Average CBR (1970-79)	Average CBR of each Category
High CBR States		
1. Uttar Pradesh	42.0	
2. Madhya Pradesh	38.5	
3. Haryana	37.8	
4. Gujarat	37.6	37.5
5. Rajasthan	37.1	
6. Andaman Nicobar Islands	35.8	
7. Arunachal Pradesh	34.1	
High Middle CBR States		
8. Andhra Pradesh	33.8	
9. Himachal Pradesh	33.5	
10. Assam	33.2	
11. Orissa	33.1	33.2
12. Chandigarh	32.8	
13. Meghalaya	32.6	
Low Middle CBR States		
14. Tripura	32.3	
15. Punjab	32.2	
16. Jammu & Kashmir	31.7	31.0
17. Bihar	30.6	
18. West Bangal	40.4	
19. Tamil Nadu	30.3	
20. Maharashtra	29.3	
Low CBR States		
21. Delhi	29.1	
22. Karnataka	29.1	
23. Pondicherry	28.6	27.8
24. Manipur	28.3	
25. Kerala	28.2	
26. Goa, Daman and Diu	23.3	

TABLE 3 : Statewise per cent of Couples Effectively Protected by all Methods (Ster., IUD and CC.Users) in 1969-70 and 1981-82.

	State	Per Cent Couples Effectively Protected	
		1969-70	1981-82
1.	Andhra Pradesh	9.57	27.52
2.	Assam	5.09	18.70
3.	Bihar	4.02	12.16
4.	Gujarat	11.94	35.69
5.	Haryana	11.91	29.21
6.	Himachal Pradesh	8.49	26.26
7.	Jammu and Kashmir	6.52	11.26
8.	Karnataka	7.57	25.24
9.	Kerala	14.73	32.60
10.	Madhya Pradesh	8.09	22.10
11.	Maharashtra	14.80	37.50
12.	Orissa	12.55	26.46
13.	Punjab	15.53	28.09
14.	Rajasthan	4.21	15.06
15.	Tamil Nadu	12.65	28.03
16.	Uttar Pradesh	5.58	11.46
17.	West Bangal	9.56	24.68
India :-		9.0	23.6

Unit of Analysis

A district is taken as the unit of analysis, to know how the family planning programme is doing at the lower level. Further, a fairly satisfactory data base has been built up at the district level during the recent past. Lastly, district level study provides a wider scope of utilising local initiative of the people through their effective involvement in the process of family planning programme.

Limitations of the Study

The whole study has been carried out on the basis of secondary data and only few socio-economic-demographic and programme input variables have been taken into account. But in reality, to know in depth what factors determine family planning performance, it is necessary to use the primary sources of data where we can have more information.

Further, the data for acceptor equivalent sterilisation refers to the time periods 1970-71 and 1979-80. Though the recent figures for the family planning performance are available only for some of the States, but in order to maintain uniformity among the States, we have taken the above time periods during which all the four States have the figures available.

CHAPTER 4

AN ANALYSIS OF DETERMINANTS OF FAMILY PLANNING PROGRAMME

In this chapter, first of all, we have discussed the inter-district variations among the variables for the years 1971 and 1981.

Secondly, the results of correlation analysis have been presented. Here we have studied the relationship between the dependent and independent variables, and the correlation among the independent variables in 1971 and 1981.

Thirdly, to determine the influence of one independent variable on the dependent variable holding all other variables constant we have presented the results of regression analysis.

Lastly, we have summed up all the results of regression analysis for all the four States. Here we have studied all those variables that have an impact on the family planning programme in the respective States. We have made comparison between KERALA and PUNJAB on the one hand, and ANDHRA PRADESH and UTTAR PRADESH, on the other.

All the results of the four States have been presented in the following order:-

(1) Kerala; (2) Andhra Pradesh; (3) Punjab; and (4) Uttar Pradesh.

INTER-DISTRICT VARIATIONS 1971 AND 1981 KERALA

The coefficient of variation for the variables for the State of Kerala in 1971 and 1981 is given below, in Table - A. The district-wise estimates of variables for 1971 are given in Appendix Table-1, and for 1981 in Appendix Table-2.

Table - A : Coefficient of variation for variables in Kerala for 1971 and 1981

	Variables	Coefficnent of variation	
		1971	1981
1.	Equivalent Sterilisation	67.65	34.12
2.	Percent Christian Population	80.61	77.31
3.	Percent Female Literacy	17.48	13.40
4.	Female Work Participation Rate	33.27	27.93
5.	Percent Urban Population	49.59	52.20
6.	Infant Mortality	29.04	16.18
7.	Medical Facilities	8.88	17.22

From the above Table, and the Appendix Tables 1 and 2, the following observations are made:-

The coefficient of variation for the variable 'Equivalent Sterilisation' was 67.65 in 1971 and 34.12

in 1981. The equivalent sterilisation ranges from 5.39 per cent to 0.64 per cent in 1971 in the districts of Ernakulam and Malapuram respectively. In 1981, it ranges from 3.25 per cent to 1.01 per cent in the districts of Trivandrum and Malapuram respectively.

Among the independent variables, the highest coefficient of variation has been found for the variable 'Percent Christian Population' in the year 1971. It ranges from 46.92 per cent in the district of Kottayam to 1.99 percent in the district of Malapuram. In 1981, the highest coefficient of variation has been again found for the variable 'Percent Christian Population' with a coefficient value of 77.31, and it ranges from 47.48 per cent to 2.38 per cent in the districts of Kottayam and Malapuram respectively.

In 1971, the lowest coefficient of variation has been found for the variable 'Percent Medical Facilities'. The coefficient value is 8.88. With regard to medical facilities, the range of variation is marked by the highest of 100 percent in the districts of Ernakulam and Alleppy and the lowest of 73.16 per cent in Trichur district.

In 1981, the lowest coefficient of variation has been found for the variable 'Infant Mortality' with a coefficient value of 16.86. In respect of 'Infant Mortality,' the range of variation is reflected by the highest estimate of 108 in Wynad district and lowest of 38 in Alleppy district.

Thus, in both the time periods, the highest coefficient of variation has been found for the variable 'Percent Christia

Population' and the lowest coefficient of variation in 1971 is for the variable 'Medical Facilities' and in 1981 it is for the variable 'Infant Mortality'.

CORRELATION ANALYSIS 1971 AND 1981

In Table-1 and Table-2, we have presented the zero-order correlation coefficient matrix for Kerala State for the year 1971 and 1981 respectively.

(A) Correlation between Dependent and Independent Variables : 1971

Among all the independent variables, the highest coefficient of correlation has been found for the variable 'Percent Urban Population' with equivalent sterilisation. The value of the coefficient is 0.639. It is statistically significant at 1 per cent level. It means that districts with higher percentage of urban population have also higher acceptance of family planning programme.

The correlation coefficient between 'Percent Christian Population' and equivalent sterilisation is 0.615, and is statistically significant. It means that where the proportion of Christian population is high, family planning acceptance will also be high.

The variable 'Percent Female Literacy' is positively correlated with the equivalent sterilisation (0.596) and is statistically significant at 1 per cent level. We can say, therefore, that districts with higher percentage of female literates will have higher rate of achievement of family planning acceptance.

The variable 'Infant Mortality Rate' is negatively correlated with the equivalent sterilisation (-0.489) and is statistically significant at 2 per cent level. It means that the districts where the infant mortality is low, family planning acceptance will be high.

The correlation coefficient between 'Percent Medical Facilities' and equivalent sterilisation is 0.488, and is statistically significant at 2 per cent level. It means districts with higher availability of medical facilities, are likely to achieve higher family planning acteptance in terms of equivalent sterilisation.

The variable 'Female Work Participation' is negatively correlated with the equivalent sterilisation. The coefficient value is -0.186. The negative sign shows that the lower the participation of females in the economic activities, the higher will be the family planning performance. It is against the hypothesis which states that higher the proportion of females in the economic activities, higher will the family planning performance. But the coefficient value -0.186 is statistically significant only at 20 per cent level. This coefficient could be negative due to sampling fluctuations. The only valid conclusion could be that this variable does not significantly influence family planning acceptance, either positively or negatively.

(B) Correlation among Independent Variables : 1971

In 1971, among all the independent variables, the highest coefficient of correlation has been found between the 'Percent Christian Population' and the 'Percent Female Literacy'. It is statistically significant at 1 per cent level. It means that in a district where the proportion of Christian population is high, literacy rate is also high.

The coefficient of correlation between 'Infant Mortality' and 'Female Literacy' is -0.606. It is also significant at 1 per cent level. It means that higher the female literacy, lower is the infant mortality.

Negative association has been found between 'Percent Female Work Participation' and 'Percent Medical Facilities'. The coefficient value is -0.531. It is statistically significant at 2 per cent level.

The coefficient of correlation between the variables 'Female Literacy' and 'Medical Facilities' is 0.388, but it is statistically significant at 5 percent level, though there is positive association between the two.

TABLE 1 : Zero-order Correlation Coefficients 1971, Kerala

Variables	Per Cent Equivalent Sterilisation	Infant Mortality Rate	Per Cent Christian Population	Per Cent Female Literacy	Per Cent Female Work Participation	Per Cent Urban Population	Per Cent Medical Facilities
Per Cent Equivalent Sterilisation	1.000						
Infant Mortality Rate	-.489	1.000					
Per Cent Christian Population	.615	-.368	1.000				
Per Cent Female Literacy	.596	-.606	.705	1.000			
Per Cent Female Work Participation	-.186	.015	-.278	-.352	1.000		
Per Cent Urban Population	.639	-.071	.077	.17[a]	-.238	1.000	
Per Cent Medical Facilities	.488	.015	.289	.388	-.531	.353	1.000

(C) Correlation between Dependent and Independent Variables : 1981

Among all the independent variables, the highest coefficient of correlation has been found for the variable 'Percent Females Literacy' with equivalent sterilisation. The value of coefficient is 0.767. It is statistically significant at 1 per cent level. It means that higher the female literacy, higher will be the family planning acceptance.

The correlation coefficient between 'Percent Christian Population' and equivalent sterilisation is 0.572 and is statistically significant at 1 per cent level. It means that where the proportion of Christian population is high, family planning acceptance will also be high.

The variable 'Percent Urban Population' is positively correlated with equivalent sterilisation (0.382) and is statistically significant at 2 per cent level. It means that districts with higher percentage of urban population will achieve higher family planning acceptance in terms of equivalent sterilisation.

The variable 'Infant Mortality Rate' is negatively correlated with the equivalent sterilisation. But the coefficient value (-.151) is statistically significant only at 20 per cent level. Lack of significance of this coefficient requires some explanation.

The correlation coefficient between the variable 'Medical Facilities' and equivalent sterilisation is 0.139 and statistically it is insignificant even at 20 per cent level. In this case the coefficient of correlation may be positive just due to sampling fluctuation; it may not be the characteristic of population. It means that it is not necessary for the districts having high medical facilities to achieve higher family planning acceptance.

The variable 'Female Work Participation Rate' is negatively correlated with equivalent sterilisation. The coefficient value is -0.315. It is statistically significant at 5 per cent level. But it is against the hypothesis which states that female participation in the economic activities leaves less time for child-rearing, besides modernising their outlook and thus increases opportunity cost of additional children and promotes small family norms. In Kerala, it does not appear to be so. Partly it may be due to the type of economic activity in which females are employed. Negative correlation coefficients of this variable with female literacy (-0.198), percent urban population (-0.064) indicate that bulk of female employment is generated in agricultural sector where child-rearing is not much of an obstacle to their participation in economic activity.

(D) Correlation among Independent Variables : 1981

In 1981, among all the independent variables, the highest coefficient of correlation has been found between the variables 'Percent Christian Population' and 'Percent Female Literacy'. The coefficient value is 0.907. It explains that in a district where the proportion of Christian population is high, there the female literacy is also high. This is true as the coefficient is positive and statistically significant at 1 per cent level.

The other variables with the high coefficient of correlation are 'Female Work Participation' and 'Medical Facilities'. The coefficient value is 0.708. It is statistically significant at 1 per cent level

Negative association has been found between the variables 'Infant Mortality' and 'Urban Population'. The coefficient value is -0.434 and is statistically significant at 1 per cent level. It means that in the urban areas the infant mortality is low.

Though positive relationship has been found between the variables 'Percent Christian Population' and 'Medical facilities', but statistically, the coefficient value 0.384 is significant only at 2 percent level.

TABLE 2 : Zero-order Correlation Coefficients 1981, Kerala

Variables	Per Cent Equivalent Sterilisation	Infant Mortality Rate	Per Cent Christian Population	Per Cent Female Literacy	Per Cent Female Work Participation	Per Cent Urban Population	Per Cent Medical Facilities
Per Cent Equivalent Sterilisation	1.000						
Infant Mortality Rate	-.151	1.000					
Per Cent Christian Population	.572	-.233	1.000				
Per Cent Female Literacy	.767	-.362	.907	1.000			
Per Cent Female Work Participation	-.315	-.026	-.053	-.198	1.000		
Per Cent Urban Population	.382	-.434	-.206	.215	-.064	1.000	
Per Cent Medical Facilities	.139	-.147	.384	.259	.708	.268	1.000

REGRESSION ANALYSIS 1971 AND 1981

The results of multiple step-wise regression analysis for the year 1971 are presented in Table A and A-1, and for the year 1981 in Table B and B-1.

The variables that have been used for explaining the differential performance of family planning in 1971 and 1981 are (1) Per cent Urban Population; (2) Per cent Christian Population; (3) Infant Mortality Rate; (4) Per cent Female Literacy; (5) Per cent Medical Facilities; and (6) Female Work Participation Rate.

From the results of 1971 from Table A - Selection 1, it has been found that the value of $\bar{R}^2$ is highest in the step 6. The value of $\bar{R}^2$ is 0.875. The regression equation from this step is as follows:-

Equivalent Sterilisation =	1.09116		
	+	0.09832 (3.802)	Percent Urban Population
	+	0.08752 (3.255)	Percent Christian Population
	-	0.16595 (-2.914)	Infant Mortality Rate
	+	0.07308 (2.349)	Percent Medical Facilities
	+	0.05231 (0.989)	Female Work Participation Rate

$\bar{R}^2 = 0.875$ $F^{\circ} = 8.496$.

From the above regression equation, we find that 87.5 per cent of the variation in the equivalent sterilisation has been explained by the independent variables. The overall

goodness of fit indicated by F-value is statistically significant at 1 per cent level.

From the T-values in the brackets, we find that only the variables 'Per cent Urban Population' and 'Per cent Christian Population' are statistically significant at 5 per cent level. Among these two variables 'Per cent Urban Population' has a higher regression coefficient, explaining that, if we increase per cent urban population by 1 unit, then the equivalent sterilisation increases by 0.10 units. Similarly if 'Per cent Christian Population' increases by 1 unit, then the equivalent sterilisation increases by 0.08 units. The variable 'Infant Mortality Rate' is also statistically significant only at 10 per cent level, and is in the expected direction. It explains that if we decrease the infant mortality by one percentage point, then the equivalent sterilisation increases by 0.16 points. Similarly the variable 'Percent Medical Facilities' is also statistically significant only at ten per cent level, explaining that if the percentage of availability of medical facilities increases by one unit, then the equivalent sterilisation increases by .07 units. Though the variable 'Female Work Participation' is in the expected direction but statistically, it is insignificant even at 20 per cent level. It explains that if we increase female work participation by one percentage point, the equivalent sterilisation increases by only .05 points. The negative influence of the variable 'Per cent Female Literacy' is quite opposite to our hypothesis and we are not sure why the regression coefficient for per cent female literacy is negative. So, an attempt has been made to find

out the influence of other variables othern than the 'Per cent Female Literacy' on equivalent sterilisation. The results are presented in Table A-1 Selection 2. Here the value of $\bar{R}^2$ is highest in the step 5. The value of $\bar{R}^2$ is 0.749. The regression equation is as follows:-

Equivalent Sterilisation = -4.39938 + 0.09363 (2.650) Percent Urban Population
+ 0.03811 (2.057) Percent Christian Population
- 0.08154 (-1.457) Infant Mortality Rate
+ 0.05096 (1.268) Percent Medical Facilities
+ 0.07233 (1.013) Female Work Participation Rate

$\bar{R}^2$ = 0.749 F = 4.943.

From the above regression equation we find that 74.9 per cent of the variation in the equivalent sterilisation has been explained by the independent variables. The overall goodness of fit indicated by F-value as 4.943 is statistically significant at 5 percent level.

From the T-value in the brackets, we find that the highest regression coefficient is of the variable 'Per cent Urban Population' but it is statistically significant only at 10 per cent level explaining that if we increase 'Per cent Urban Population' by one unit, then the equivalent sterilisation increases by .10 units. The variable 'Per cent Christian Population' is statistically significant only at 20 per cent

level. It explains that if we increase the per cent Christian Population by one point, then the equivalent sterilisation increases by only 0.03 points. The other variables, that is, 'Infant Mortality Rate,' 'Per cent Medical facilities' and 'Female Work Participation' are in the expected directions. But statistically, they are insignificant even at 20 per cent level. So, the above analysis shows that in the year 1971 only the variable 'Per cent Urban Population' has been found to exercise the largest positive influence on family planning acceptance.

From the results of 1981 from Table B - Selection 1, it has been found that the value of $\bar{R}^2$ is highest in the step 4. The value of $\bar{R}^2$ is 0.765. In the step 5, the value of $\bar{R}^2$ decreases from 0.765 to 0.719. A similar decrease can be found in the step 6, with a value of $\bar{R}^2$ as 0.650. So the regression equation has been formed from step 4. It is as follows:-

Equivalent
Sterilisation = -9.10379 + 0.14725 Percent Female Literacy
(3.717)

- 0.04724 Percent Christian Population
(-2.159)

+ 0.03037 Percent Urban Population
(1.972)

+ 0.03944 Infant Mortality Rate
(1.913)

$\bar{R}^2$ = 0.765 F = 6.729

From the above regression equation, we find that 76.5 per cent of the variation in the equivalent

sterilisation has been explained by the independent variables. The overall goodness of fit indicated by F-value as 6.729 is statistically significant at one per cent level.

From the T-values in the brackets, we find that only the variable 'Percent Female Literacy' is statistically significant at 2 per cent level, explaining that if we increase 'Per cent Female Literacy' by one unit, then the equivalent sterilisation increases by 0.14 units. The variable 'Per cent Urban Population' is statistically significant only at 20 per cent level. It explains that if the 'Per cent Urban Population' increases by one unit, then the equivalent sterilisation increases only by 0.03 units. The variables 'Per cent Christian Population' is not in the expected direction as the hypothesis states that where the proportion of Christian population is high, family planning acceptance will also be high. Similarly the positive influence of 'Infant Mortality Rate' is not in line with our hypothesis, and we are not sure about the reasons as to why the above two variables are not in the expected direction. So, an attempt has been made to find out the influence of the other variables other than the 'Per cent Christian Population' and 'Infant Mortality Rate'. From the Table B-1 - Selection 2, it has been found that the value of $\bar{R}^2$ is highest in step 2. The value of $\bar{R}^2$ is 0.593. The regression equation from this step is as

given below:-

Equivalent
Sterilisation = -2.22351 + 0.06264 Percent Female
(3.087) Literacy

+ 0.01765 Percent Urban
(0.979) Population

$\bar{R}^2$ = 0.593 F-value = 6.181.

From the above regression equation, we find that 59.3 per cent of the variation in the equivalent sterilisation has been explained by the variables 'Per cent Female Literacy' and 'Per cent Urban Population.' The overall goodness of fit indicated by F-value as 6.181 is statistically significant at one percent level.

From the T-values in the brackets, we find that between the two variables in the above equation, only the 'Per cent Female Literacy' has the higher regression coefficient. It explains that if the 'Per cent Female Literacy' is increased by one unit, then the equivalent sterilisation increases by 0.06 units. The variable 'Per cent Urban Population' is statistically insignificant even at 20 per cent level. So, it has been found from the above analysis that female literacy plays an important role in the acceptance of family planning programme.

To conclude the regression results, we find that in 1971 'Per cent Urban Population' acted as an important variable in promoting family planning acceptance. But in 1981, it is the 'Female Literacy' which occupied the first place in promoting family planning acceptance.

TABLE - A : Results of Regression of Determinants of Family Planning Performance in Kerala 1971 Selection 1

Variables	Intercept	Regression Coefficient	Standard Error of Estimate	T-Value	$\bar{R}^2$	F-Value
Step 1:						
Urban Population	.26554	0.11224	.04780	2.348	.408	5.514
Step 2:						
Urban Population	.59648	.10451	.03459	3.021	.697	9.478
Christian Population		.04911	.01698	2.892		
Step 3:						
Urban Population		.10246	.03255	3.148		
Christian Population	.93475	.04043	.01714	2.359	.737	7.795
Infant Mortality		-.07567	.05454	-1.387		
Step 4:						
Urban Population		.11221	.03243	3.460		
Christian Population		.07631	.03411	2.237		
Infant Mortality	.544127	-.12622	.06735	-1.874	.762	6.643
Female Literacy		-.08357	.06950	-1.203		
Step 5:						
Urban Population		.09687	.02575	3.762		
Christian Population		.08952	.02674	3.348		
Infant Mortality	3.46657	-.17463	.05611	-3.112	.867	10.057
Female Literacy		-.13772	.05871	-2.346		
Medical Facilities		.06233	.02907	2.144		
Step 6:						
Urban Population		.09832	.02586	3.802		
Christian Population		.08752	.02689	3.255		
Infant Mortality		-.16595	.05695	-2.914		
Female Literacy	1.09116	-.12719	.05983	-2.126	.875	8.496
Medical Facilities		.07308	.03111	2.349		
Female Work Participation		.05231	.05291	.989		

TABLE A-1 : Results of Regression of Determinants of Family Planning Performance in Kerala 1971: Selection 2

Variables	Intercept	Regression Coefficient	Standard Error of Estimate	T-Value	$\bar{R}^2$	F-Value
Step 1:						
Urban Population	0.26554	.11224	.04780	2.348	.408	5.514
Step 2:						
Urban Population	-.59648	.10451	.03459	3.021	.697	9.478
Christian Population		.04911	.01698	2.892		
Step 3:						
Urban Population		.10246	.03255	3.148		
Christian Population	.93475	.04043	.01714	2.359	.737	7.795
Infant Mortality		-.07567	.05454	-1.387		
Step 4:						
Urban Population		.09099	.03533	2.576		
Christian Population		.03511	.01833	1.915		
Infant Mortality	-1.65626	-.08396	.05606	-1.498	.737	5.891
Medical Facilities		.03300	.03618	.912		
Step 5:						
Urban Population		.09363	.03533	2.650		
Christian Population	-4.39938	.03811	.01852	2.057	.749	4.943
Infant Population		-.08154	.05596	-1.457		
Medical Facilities		.05096	.04020	1.268		
Female Work Participation		.07233	.07138	1.013		

TABLE - B : Results of Regression of Determinants of Family Planning Performance in Kerala 1981 : Selection 1

Variable	Intercept	Regression Coefficient	Standard Error of Estimate	T-Value	R^{-2}	F-Value
Step 1:						
Female Literacy	-2.16871	.06691	.01976	3.386	.589	11.462
Step 2:						
Female Literacy		.12219	.04460	2.739		
Christian Population	-5.13660	-.03494	.02558	-1.366	.635	7.285
Step 3:						
Female Literacy		.11893	.04416	2.694		
Christian Population	-5.25665	-.03569	.02527	-1.412	.651	5.370
Urban Population		.01830	.01688	1.084		
Step 4:						
Female Literacy		.14725	.03962	3.717		
Christian Population		-.04724	.02188	-2.159		
Urban Population	-9.10379	.03037	.01540	1.972	.765	6.729
Infant Mortality		.03944	.02061	1.913		
Step 5:						
Female Literacy		.14866	.04580	3.246		
Christian Population		-.04841	.02636	-1.836		
Urban Population	-9.29819	.03000	.01748	1.716	.719	4.324
Infant Mortality		.03965	.02308	1.718		
Medical Facilities		.03343	.28281	.118		
Step 6:						
Female Literacy		.14670	.05657	2.593		
Christian Population		-.04816	.03051	-1.578		
Urban Population		.02908	.02227	1.306		
Infant Mortality	-9.16133	.03889	.02776	1.401	.650	2.713
Medical Facilities		:07746	.56130	0.138		
Female Work Participation		-.00702	.07281	-.096		

TABLE B-1 : Results of Regression of Determinants of Family Planning Performance in Kerala 1981 Selection 2

Variables	Intercept	Regression Coefficient	Standard Error of Estimate	T-Value	R^{-2}	F-Value
Step 1:						
Female Literacy	-2.16871	.06691	.01976	3.386	.589	11.462
Step 2:						
Female Literacy	-2.22351	.06264	.02029	3.087	.593	3.961
Urban Population		.01765	.01803	.979		
Step 3:						
Female Literacy		.05986	.02150	2.784		
Urban Population	-1.57677	.01737	.01876	.926	.569	3.961
Female Work Participation		-.02772	.04064	-.682		
Step 4:						
Female Literacy		.05780	.02821	2.049		
Urban Population		.01616	.02245	.720		
Female Work Participation	-1.56566	-.03641	.07924	-.459	.498	2.488
Medical Facilities		.08097	.61118	.132		

INTER-DISTRICT VARIATIONS 1971 AND 1981 ANDHRA PRADESH

The coefficient of variation for the variables for the State of Andhra Pradesh in 1971 and 1981 is given below, in Table - A. The district-wise estimates of variables for 1971 are given in Appendix Table-3, and for 1981 in Appendix Table-4.

Table - A : Coefficient of variation for variables in Andhra Pradesh for 1971 and 1981

Variables	Coefficient of variation	
	1971	1981
1. Equivalent Sterilisation	50.11	40.40
2. Percent Muslim Population	77.89	83.85
3. Percent Female Literacy	59.58	48.02
4. Female Work Participation Rate	24.18	24.14
5. Percent Urban Population	98.91	80.78
6. Infant Mortality	46.38	27.68
7. Medical Facilities	67.45	69.26

From the above Table, and Appendix Tables 3 and 4, the following observations are made:-

The coefficient of variation for the variable 'Equivalent Sterilisation' was 50.11 in 1971 and 40.40 in

1981. The equivalent sterilisation ranges from 5.32 per cent to 1.27 per cent in 1971 in the districts of Hyderabad and Mahbubnagar respectively. In 1981, it ranges from 4.61 per cent to 0.97 per cent in the districts of Nellore and Adilabad respectively.

Among the independent variables, the highest coefficient of variation has been found for the variable 'Percent Urban Population' in the year 1971. It ranges from 65.9 per cent in the district of Hyderabad to 6.7 per cent in the district of Nalgonda.

In 1981, the highest coefficient of variation has been found for the variable 'Per cent Muslim Population' with a coefficient value of 83.85, and it ranges from 35.91 per cent to 0.25 per cent in the districts of Hyderabad and Srikakulam,respectively.

In 1971, the lowest coefficient of variation has been found for the variable 'Female Work Participation'. The coefficient value is 24.18. With regard to female work participation, the range of variation is marked by the highest of 38.1 per cent in the district of Adilabad and the lowest of 16.6 per cent in Hyderabad district.

In 1981, the lowest coefficient of variation has been again found for the variable 'Female Work Participation'. The coefficient value is 24.14. The range of variation is reflected by the highest estimate of 44.77 per cent in the district of Mahbubnagar and lowest of 6.35 in

Hyderabad district.

Thus, it has been found that the highest coefficient of variation in the year 1971 has been for the variable 'Percent Urban Population'. But in 1981, the highest coefficient of variation is of 'percent Muslim Population'. The lowest coefficient of variation in both the time periods, is for the variable 'Female Work Participation.'

CORRELATION ANALYSIS 1971 AND 1981

In Table-1 and Table-2, we have presented the zero-order correlation coefficient matrix for the State of Andhra Pradesh for the year 1971 and 1981 respectively.

(A) Correlation between Dependent and Independent variables : 1971

Among all the independent variables, the highest coefficient of correlation has been found for the variable 'Percent Female Literacy'. The value of coefficient is 0.652. It is statistically significant at 1 per cent level. It means that higher the female literacy, higher will be the family planning performance.

The correlation coefficient between 'Percent Urban Population' and equivalent sterilisation is 0.519 and is statistically significant at 1 per cent level. It means that districts with higher percentage of urban population will achieve higher family planning acceptance rate.

The variable 'Percent Muslim Population' is negatively correlated with equivalent sterilisation. The coefficient value is -0.235. It is statistically significant at 5 per cent level. It means that those districts where the proportion of Muslim population is high, family planning acceptance is low.

The variable 'Percent Medical Facilities' is positively correlated with the equivalent sterilisation (0.090) and is statistically insignificant even at 20 per cent level.

In this case, the coefficient of correlation may be positive just due to sampling fluctuations. It may not be the characteristic of population. It means that this variable does not significantly influence family planning acceptance either positively or negatively as this variable is statistically insignificant.

The correlation coefficient between infant mortality rate and equivalent sterilisation is 0.643. It is statistically significant at 1 per cent level, but it is against our hypothesis which states that lower the infant mortality, higher the family planning acceptance.

The variable 'Female Work Participation Rate' is negatively correlated with the equivalent sterilisation. The coefficient value is -0.472. It is statistically significant at 1 per cent level, but against the hypothesis formed, which states that higher the female participation rate in the economic activity, higher will be the family planning performance, as female participation in economic activity leaves less time for child-rearing besides modernising their outlook and thus increases opportunity cost of additional children and promotes small family norms.

(B) Correlation among Independent Variables : 1971

Among all the independent variables, the highest coefficient of correlation has been found between the variables 'Percent Female Work Participation' and 'Percent Urban Population'. The coefficient value of -0.774 though statistically significant at 1 per cent level, gives the negative relationship between the above two variables.

Similarly, negative association has been found between female literacy and female work participation. The coefficient value is -0.708 and is statistically significant at 1 per cent level.

Positive relationship has been found between 'Percent Muslim Population' and 'Percent Urban Population'.It is also statistically significant at 1 per cent level.

The coefficient of correlation between 'Percent Female Literacy' and 'Percent Urban Population' is 0.599. It explains that in the urban areas, female literacy is high.

Positive association is depicted between the variables 'Percent Female Literacy' and 'Percent Medical Facilities'. The value of the coefficient is 0.438. It is statistically significant at 1 per cent level.

TABLE 1 : Zero-order Correlation Coefficients 1971, Andhra Pradesh

Variables	Per Cent Equivalent Sterilisation	Infant Mortality Rate	Per Cent Muslim Population	Per Cent Female Literacy	Per Cent Female work Participation	Per Cent Urban Population	Per Cent Medical Facilities
Per Cent Equivalent Sterilisation	1.000						
Infant Mortality Rate	.643	1.000					
Per Cent Muslim Population	-.235	.054	1.000				
Per Cent Female Literacy	.652	.347	.248	1.000			
Per Cent Female Work Participation	-.472	-.217	-.278	-.708	1.000		
Per Cent Urban Population	.519	.296	.677	.599	-.774	1.000	
Per Cent Medical Facilities	.090	-.185	-.045	.438	-.106	-.130	1.000

(C) Correlation between Dependent and Independent Variables : 1981

Among all the independent variables, the highest correlation coefficient has been found for the variable 'Percent Female Literacy'. The value of coefficient is 0.437. It is statistically significant at 1 per cent level which means that those districts where the female literacy is high, family planning acceptance is also high.

The correlation coefficient between 'Percent Medical Facilities' and equivalent sterilisation is 0.406 and is statistically significant at 1 per cent level. It means that higher the availability of medical facilities, higher will be the family planning performance.

The variable 'Percent Muslim Population' is negatively correlated with equivalent sterilisation. The coefficient value is -0.243. But it is statistically significant only at 5 per cent level. But it suits well with our hypothesis, that is, higher the proportion of Muslim population, lower will be the family planning performance.

The correlation coefficient between infant mortality rate and equivalent sterilisation is -0.074. Though it suits well with our hypothesis, but statistically it is insignificant even at 20 per cent level, which means that this variable does not significantly influence family-planning acceptance either negatively or positively. Or to say that districts with low infant mortality have no positive or negative influence on family planning performance.

The variable 'Female Work Participation Rate' is negatively correlated with equivalent sterilisation. The coefficient value is -0.207. Though it is against the hypothesis formed, but statistically it is significant only at 10 per cent level. In this case the coefficient of correlation may be negative due to sampling fluctuations. It means districts with higher percentage of female workers in economic activity need not achieve higher family planning acceptance. Similarly these districts need not necessarily be worse in family planning performance.

The correlation coefficient between 'Percent Urban Population' and equivalent sterilisation is -0.006. Though it is against the hypothesis but statistically it is insignificant even at 20 per cent level. The only valid conclusion could be that this variable does not significantly influence family planning acceptance either positively or negatively.

(D) Correlation among Independent Variables : 1981

In 1981, the highest coefficient of correlation has been found between 'Percent Female Literacy' and 'Female Work Participation'. The coefficient value is -0.885. It means that both are negatively correlated with each other.

Negative association has been formed between the variables 'Percent Female Work Participation' and 'Percent

Urban Population'. The coefficient value is -0.860.

Negative association has been found between 'Infant Mortality' and 'Percent Urban Population' with a coefficient value of -0.811. It is statistically significant at 1 per cent level.

Positive association has been found between the variables 'Percent Female Literacy' and 'Percent Urban Population'.

The coefficient of correlation between 'Percent Muslim Population' and 'Percent Urban Population' shows positive association with a coefficient value of 0.775.

Negative association has been found between 'Infant Mortality Rate' and 'Percent Muslim Population'. The value of the coefficient is -0.681.

Similarly, negative relationship has been found between infant mortality and female literacy, with a coefficient value of -0.618.

Positive association has been found between infant mortality and female work participation. The coefficient value is 0.602. It is statistically significant at 1 per cent level.

TABLE 2 : Zero-Order Correlation Coefficients 1981, Andhra Pradesh

Variables	Per Cent Equivalent Sterilisation	Infant Mortality Rate	Per Cent Muslim Population	Per Cent Female Literacy	Per Cent Female Work Participation	Per Cent Urban Population	Per Cent Medical Facilities
Per Cent Equivalent Sterilisation	1.000						
Infant Mortality Rate	-.074	1.000					
Per Cent Muslim Population	-.243	-.681	1.000				
Per Cent Female Literacy	.437	-.618	.402	1.000			
Per Cent Female Work Participation	-.207	.602	-.513	-.885	1.000		
Per Cent Urban Population	-.006	-.811	.775	.780	-.860	1.000	
Per Cent Medical Facilities	.406	-.132	-.273	-.043	.280	-.336	1.000

REGRESSION ANALYSIS 1971 AND 1981

The results of multiple step-wise regression analysis for the year 1971 are presented in Table C and for the year 1981 in Table D.

The variables that have been used for explaining the differential performance of family planning in 1971 and 1981 are (1) Per cent Urban Population; (2) Per cent Muslim Population; (3) Infant Mortality Rate; (4) Per cent Female Literacy; (5) Per cent Medical Facilities; and (6) Female Work Participation Rate.

From the results of 1971 from Table C, it has been found that the value of $\bar{R}^2$ is highest in step 2. The value of $\bar{R}^2$ is 0.602. After this step, the value of $\bar{R}^2$ declines. The regression equation from the step 2, is as follows:-

Equivalent Sterilisation =	0.22675	+ 0.08610 (3.154)	Percent Female Literacy
		+ 0.04095 (3.067)	Infant Mortality Rate
$\bar{R}^2$ = 0.602		F = 14.816.	

From the above regression equation, we find that 60.2 per cent of the variation in the equivalent sterilisation has been explained by the independent variables. The overall goodness of fit indicated by F-value as 14.816 is statistically significant at 1 per cent level. Out of the above two variables, only the 'Per cent Female Literacy' is in the expected

direction. It is also statistically significant at 1 per cent level, explaining that if we increase the 'Per cent Female Literacy' by one unit, then the equivalent sterilisation increases by 0.08 units. The positive influence of 'Infant Mortality Rate' is quite opposite to our hypothesis, which states that the lower the infant mortality, the higher will be the family planning acceptance. So in 1971 'Per cent Female Literacy' is an important variable in the acceptance of family planning programme.

From the results of 1981, from Table D, it has been found that the value of $\bar{R}^2$ is highest in step 3. The value of $\bar{R}^2$ is 0.440. The regression equation formed is as below:-

Equivalent Sterilisation =	1.303940	+ 0.05605 (3.244)	Percent Female Literacy
		- 0.04546 (-2.047)	Percent Muslim Population
		+ 0.01417 (1.800)	Percent Medical Facilities
$\bar{R}^2$ = 0.440		F = 5.577.	

From the above regression equation, we find that only 44 per cent of the variation in the equivalent sterilisation has been explained by the indepent variables. The overall goodness of fit indicated by F-value as 5.577 is statistically significant at 1 per cent level.

From the T-values in the brackets, we find that only the variable 'Percent Female Literacy' is statistically significant at 1 per cent level. It explains that if we

increase the 'Percent Female Literacy' by one unit, then the equivalent sterilisation increases by 0.05 units. The variable 'Percent Muslim Population' is in the expected direction and suits well with our hypothesis, that is, higher the prpportion of Muslims in a district, lower will be the acceptance of family planning. From the results, it has been found that one unit decrease in the percentage of Muslim population leads to an increase of 0.04 units of equivalent sterilisation. But this variable is statistically significant only at 10 per cent level. The variable 'Per cent Medical Facilities' is statistically significant only at 10 per cent level and explains that one unit increase in the availability of Medical facilities increases the equivalent sterilisation by 0.01 units. Thus, we have seen that only the variable 'Percent Female Literacy' is important in explaining the differential family planning performance.

To sum up, the results of regression analysis, for the year 1971 and 1981, we find that female literacy is an important variable for the acceptance of family planning.

TABLE C : Results of Regression of Determinants of Family Planning Performance in Andhra Pradesh 1971.

Variables	Intercept	Regression Coefficient	Standard Error of Estimate	T-Value	$\bar{R}^{-2}$	F-Value
Step 1:						
Female Literacy	1.30849	.11516	.03075	3.745	.425	14.022
Step 2:						
Female Literacy	.22675	.08610	.02730	3.154	.602	14.816
Infant Mortality		.04095	.01335	3.067		
Step 3:						
Female Literacy		.07240	.03319	2.181		
Infant Mortality	.25717	.03975	.01362	2.920	.593	9.819
Urban Population		.01035	.01388	.746		
Step 4:						
Female Literacy		.07812	.03936	1.985		
Infant Mortality		.03914	.01415	2.765		
Urban Population	-.34651	.01372	.01835	.748	.572	6.989
Female Work Participation		.01983	.06789	.292		
Step 5:						
Female Literacy		.07404	.05450	1.359		
Infant Mortality		.03987	.01598	2.495		
Urban Population		.01475	.02103	.701		
Female Work Participation	-.38357	.01951	.07015	.278	.545	5.249
Medical Facilities		.00688	.06117	.113		
Step 6:						
Female Literacy		.07368	.05718	1.288		
Infant Mortality		.03978	.01669	2.384		
Urban Population		.01584	.03565	.444		
Female Work Participation	-.42365	.02120	.08478	.250	.515	4.083
Medical Facilities		.00765	.06635	.115		
Muslim Population		-.00255	.06607	-.039		

TABLE D : Results of Regression of Determinants of Family Planning Performance in Andhra Pradesh 1981

Variable	Intercept	Regression Coefficient	Standard Error of Estimate	T-Value	R^{-2}	F-Value
Step 1:						
Female Literacy	1.34187	.04002	.01890	2.117	.191	4.482
Step 2:						
Female Literacy	1.49381	.05842	.01827	3.198	.368	6.000
Muslim Population		-.05664	.02261	-2.505		
Step 3:						
Female Literacy		.05605	.01728	3.244		
Muslim Population	1.03940	-.04546	.02221	-2.047	.440	5.577
Medical Facilities		.01417	.00787	1.800		
Step 4:						
Female Literacy		.07599	.03886	1.955		
Muslim Population		-.04180	.02354	-1.776		
Medical Facilities	-.24910	.01173	.00908	1.292	.419	4.101
Female Work Participation		.02736	.04754	.576		
Step 5:						
Female Literacy		.07536	.04248	1.774		
Muslim Population		-.04260	.03012	-4.414		
Medical Facilities		.01173	.00938	1.251		
Female Work Participation	-.18292	.02718	.04927	-.552	.383	3.077
Infant Mortality		-.00045	.01009	-.045		

INTER-DISTRICT VARIATIONS 1971 AND 1981 **PUNJAB**

The coefficient of variation for the variables for the State of Punjab in 1971 and 1981 is given below, in Table - A. The district-wise estimates of variables for 1971 are given in Appendix Table-5, and for 1981 in Appendix Table-6.

Table - A : Coefficient of variation for variables in Punjab for 1971 and 1981

Variables	Coefficient of variation	
	1971	1981
1. Equivalent Sterilisation	19.22	12.05
2. Percent Muslim Population	175.53	163.21
3. Percent Female Literacy	26.57	25.46
4. Female Work Participation Rate	20.18	37.42
5. Percent Urban Population	29.43	29.26
6. Infant Mortality	16.77	13.99
7. Percent Medical Facilities	26.33	61.86

From the above Table, and the Appendix Tables 5 and 6, the following observations are made:-

The coefficient of variation for the variable 'Equivalent Sterilisation' was 19.22 in 1971 and 12.05 in 1981. The

range of variation for equivalent sterilisation in 1971 is reflected by the highest estimate of 2.55 per cent for Kapurthala district and lowest of 1.44 per cent for Hoshiarpur district. The corresponding estimates in the year 1981 are 1.90 per cent for Patiala district and 1.39 per cent for Jalandhar district.

Among the independent variables, the highest coefficient of variation has been found for the variable 'Percent Muslim Population'. The value of coefficient of variation is 175.53. The range of variation for 'Muslim Population' is reflected by the highest estimate of 5.62 per cent for Sangrur district and lowest of 0.16 for Amritsar district. Again, in 1981, the highest coefficient of variation has been found for the variable 'Percent Muslim Population' with a coefficient value of 163.21. The range of variation for Muslim population in 1981 is reflected by the highest estimate of 6.34 per cent in Sangrur district and lowest of 0.10 per cent in Amritsar district.

The lowest coefficient of variation has been found for the variable 'Infant Mortality' in 1971. The coefficient of variation is 16.77. With regard to the estimates of infant mortality the range of variation is marked by the highest of 76 per 1000 in Hoshiarpur district and the lowest of 48 per 1000 in Amritsar district. Again in 1981, the lowest coefficient of variation is for the variable 'Infant Mortality'. The range of variation is reflected by the

highest of 163 in Gurdaspur and lowest of 95 in Patiala district.

Thus, in both the time periods (1971 and 1981) the highest coefficient of variation has been found for the variable 'Percent Muslim Population' and lowest for the variable 'Infant Mortality'.

CORRELATION ANALYSIS 1971 AND 1981

In table-1 and Table-2, we have presented the zero-order correlation coefficient matrix for the State of Punjab for the year 1971 and 1981 respectively.

(A) Correlation between Dependent and Independent Variables: 1971

The correlation coefficient between 'Percent Muslim Population' and equivalent sterilisation is -0.024. Though the relation suits well with our hypothesis, but statistically it is insignificant even at 20 percent level. It means that this variable does not influence family planning acceptance either positively or negatively.

The variable 'Percent Medical Facilities' is negatively correlated with the equivalent sterilisation. The coefficient value is -0.274. Though the relationship between the two variables does not suit well with our hypothesis which states that higher the availability of medical facilities, higher will be the family planning performance. But the lack of significance of this variable means that districts with higher percentage of availability of medical facilities do not necessarily respond to high family planning acceptance. Similarly these districts need not necessarily be worse in family planning performance.

Negative relationship has been found between the variables 'Female Work Participation Rate' and equivalent

sterilisation. The coefficient value is -0.127. Though the coefficient shows that as the female participation in economic activity goes down, family planning acceptance increases. But the coefficient is not statistically significant at even 20 per cent level. It means that this coefficient could be negative on account of sampling fluctuations also. The only valid conclusion could be this variable does not significantly influence family planning acceptance either positively or negatively.

The variable 'Percent Female Literacy' is negatively correlated with the equivalent sterilisation. The coefficient value is -0.067. It shows that it is against the hypothesis which states that higher the female literacy, higher will be the family planning acceptance. Selection of this variable as an independent variable was governed by the consideration that female education plays some additional role in lowering family size ideals as female education encourages female participation in economic and social activities, leaving less time for child-care and thus raising opportunity cost of additional children. But it has also been found that the coefficient is statistically insignificant even at 20 per cent level, which means that this variable does not influence family planning acceptance either positively or negatively.

The coefficient of correlation between 'Percent Urban Population' and equivalent sterilisation is -0.066, and is against the hypothesis which states that higher the urban

population, higher will be the family planning performance. But statistically this variable is insignificant even at 20 per cent level. It explains that districts with higher percentage of urban population need not necesarily have higher family planning acceptance. Similarly these districts need not necessarily be worse in family planning performance.

Positive relationship has been found between the variable 'Infant Mortality Rate' and equivalent sterilisation. The coefficient value is 0.027. Statistically this variable is insignificant and thus does not influence family planning acceptance either positively or negatively.

(B) Correlation among Independent Variables : 1971

Among all the independent variables, the highest coefficient of correlation has been found between 'Infant Mortality Rate'and 'Percent Medical Facilities'. The value of the coefficient is -0.799. It is statistically significant at 1 per cent level. It means that higher the availability of medical facilities,lower will be the infant mortality.

Positive association has been found between the variables 'Percent Female Work Participation' and 'Percent Urban Population' with a coefficient value of 0.731.

The coefficient of correlation between 'Percent Urban Population' and 'Medical Facilities' is 0.667. It is statistically significant at 1 per cent level.

Negative association has been found between 'Infant Mortality Rate' and 'Percent Urban Population'. The coefficient value is -0.657.

The coefficient of correlation between 'Percent Female Literacy' and 'Percent Female Work Participation' is 0.517. It explains that higher the female literacy, higher will be the female work participation.

Negative association has been found between the variables 'Percent Muslim Population' and 'Percent Female Literacy Rate'. The value of the coefficient is -0.484. It is also statistically significant, at 2 percent level.

Similarly, negative association has been found between the 'Percent Muslim Population' and 'Female Work Participation'. The coefficient value is -0.447 which is statistically significant at 2 per cent level.

(C) Correlation between Dependent and Independent Variables : 1981

The coefficient of correlation between 'Infant Mortality Rate' and equivalent sterilisation is -0.431. It suits well with our hypothesis which states that lower the infant mortality, higher will be the family planning acceptance. It is also statistically significant at 1 per cent level.

The variable 'Percent Urban Population' is positively correlated with the equivalent sterilisation. The coefficient value is 0.186. Though it is in the right direction, but statistically it is significant only at 20 per cent level, which means that this variable does not significantly influence the family planning acceptance.

The coefficient of correlation between 'Percent Medical Facilities' and equivalent sterilisation is 0.126. Statistically it is insignificant. Though it suits with the hypothesis which states that higher the availability of medical facilities, higher will be the family planning acceptance, but due to its insignificant relation with the equivalent sterilisation it loses its important in influencing family planning acceptance.

Negative correlation has been found between the 'Percent Muslim Population' and equivalent sterilisation, with a coefficient value as -0.037. Statistically this variable is insignificant even at 20 per cent level and thus it may not influence family planning acceptance significantly.

Positive association has been found between the variable 'Female Work Participation Rate' and equivalent sterilisation. But the coefficient 0.037 is not statistically significant. According to the hypothesis formulated female participation in economic activity leaves less time for child-rearing besides modernising their outlook, and

thus increases the opportunity cost of additional children and promotes small family norms. In Punjab, it does not appear to be so. Partly, it may be due to type of economic activities in which females are employed. Negative correlation coefficient of this variable with percent female literacy,(-0.526), percent urban population (-0.426) indicate that bulk of female employment is generated in agriculture sector and higher female participation in economic activity indicates predominance of agricultural sector, where child-rearing is not much of an obstacle to their participation in economic activity. However, in agricultural milieu, additional children are still considered an asset, as helping hands in agricultural operations. Thus larger female participation does not appear to promote small family norm and family acceptance in Punjab.

The coefficient of correlation between the 'Percent Female Literacy' and equivalent sterilisation is -0.541. It is statistically significant at 1 per cent level. It appears that in the existing social and economic milieu of Punjab, female literacy is negatively associated with the acceptance of family planning.

(D) Correlation among Independent Variables : 1981

In 1981, the highest coefficient of correlation has been found between the 'Percent Female Literacy' and 'Female Work Participation'. The value of the coefficient

is -0.526. It is statistically significant at 1 percent level. But it gives us a negative relationship between the two variables.

Negative relationship has been found between 'Percent Muslim Population' and 'Percent Medical Facilities' with a coefficient value of -0.522.

Negative association has been found between 'Infant Mortality Rate' and 'Percent Urban Population'. The value of the coefficient is -0.520.

Negative association has been found between the variables 'Percent Muslim Population' and 'Percent Female Literacy'. The value of the coefficient is -0.440, which is statistically significant at 1 percent level.

TABLE 1 : Zero-order Correlation Coefficients 1971, Punjab

Variables	Per Cent Equivalent Sterilisation	Infant Mortality Rate	Per Cent Muslim Population	Per Cent Female Literacy	Per Cent Female Work Participation	Per Cent Urban Population	Per Cent Medical Facilities
Per Cent Equivalent Sterilisation	1.000						
Infant Mortality Rate	0.027	1.000					
Per Cent Muslim Population	-.024	-.258	1.000				
Per Cent Female Literacy	-.067	.390	-.484	1.000			
Per Cent Female Work Participation	-.127	-.119	-.447	.517	1.000		
Per Cent Urban Population	-.066	-.657	-.134	.233	.731	1.000	
Per Cent Medical Facilities	-.274	-.799	.042	-.092	.148	.667	1.000

TABLE 2 : Zero-order Correlation Coefficients 1981 , Punjab

Variables	Per Cent Equivalent Sterilisation	Infant Mortality Rate	Per Cent Muslim Population	Per Cent Female Literacy	Per Cent Female Work Participation	Per Cent Urban Population	Per Cent Medical Facilities
Per Cent Equivalent Sterilisation	1.000						
Infant Mortality Rate	-.431	1.000					
Per Cent Muslim Population	-.037	.070	1.000				
Per Cent Female Literacy	-.541	-.079	-.440	1.000			
Per Cent Female Work Participation	.037	.252	.329	-.526	1.000		
Per Cent Urban Population	.186	-.520	-.196	.058	-.426	1.000	
Per Cent Medical Facilities	.126	-.036	-.522	.313	.039	.310	1.000

REGRESSION ANALYSIS 1971 AND 1981

The results of multiple step-wire regression analysis for the year 1971 are presented in Table E, and E-1, and for the year 1981 in Table F, and F-1.

The variables that have been used for explaining the differential performance of family planning in 1971 and 1981 are the same as used in the State of Andhra Pradesh.

From the results of 1971 from Table E-Selection 1, it has been found that the value of $\bar{R}^2$ increases from 0.075 in Step 1 to 0.086 in Step 2. But in step 3, though the value of $\bar{R}^2$ has decreased to the level of 0.03, it has again increased to 0.099 in step 4. Further in step 5, the value of $\bar{R}^2$ has decreased to 0.033, but again it has increased to 0.232 in step 6. This trend is not clear to form regression equation.

Further, out of the six independent variables, in step 6, shows that the variable 'Percent Medical Facilities' and 'Female Work Participation' is in the unexpected direction. So, an attempt has been made to find out the influence of other variables,other than the variables 'Percent Medical Facilities' and 'Female Work Participation Rate'. The results after removing these two variables were not in the expected direction. So again, an attempt was made to find out the influence of other variables, except 'Percent Medical Facilities'.

on equivalent sterilisation. The results are presented in Table E-1, Selection-2. Here the value of $\bar{R}^{-2}$ is highest in step 5. The value of $\bar{R}^{-2}$ is 0.601. The regression equation is as follows:-

Equivalent Sterilisation =	1.82611	- 0.57473 (-0.381)	Female Work Participation
		- 0.03156 (-0.251)	Percent Muslim Population
		+ 0.01990 (0.271)	Percent Urban Population
		+ 0.00861 (0.224)	Infant Mortality Rate
		- 0.00615 (-0.174)	Percent Female Literacy

$\bar{R}^{-2}$ - 0.601 F = 0.041

From the above regression equation, we find that 60.1 per of the variation in the equivalent sterilisation has been explained by the independent variables. The overall goodness of fit indicated by F-value as 0.041 is statistically insignificant.

From the T-values in the brackets, we find that all the variables are statistically insignificant even at 20 per cent level,but only two variables that is 'Percent Muslim Population' and 'Percent Urban Population' are in the expected direction. The negative impact of 'Female Work Participation'and 'Female Literacy' is not clear. Further, positive impact of 'Infant Mortality' on equivalent sterilisation has been depicted.

So, the above analysis shows that no variable in Punjab in the year 1971 has any influence on family

planning performance.

From the results of 1981 from Table-F-Selection 1, it has been found that the value of $\bar{R}^2$ is highest in step 5. The value of $\bar{R}^2$ is 0.690. In step 6 the value of $\bar{R}^2$ has decreased to 0.633. So the regression equation formed from step 5 is as follows:-

Equivalent
Sterilisation = 3.98190 - 0.02806 (-3.995) Percent Female Literacy

- 0.00693 (-2.660) Infant Mortality Rate

+ 0.01038 (2.592) Percent Medical Facilities

- 0.05795 (-2.194) Female Work Participation

- 0.01403 (-1.864) Percent Urban Population

$\bar{R}^2$ = .690 F = 4.374.

From the above regression equation, we find that 69.0 per cent of the variation in the equivalent sterilisation has been explained by the independent variables. The overall goodness of fit indicated by F-value as 4.374 is statistically significant at 5 per cent level.

From the T-values in the brackets, we find that the highest regression coefficient of the two variables 'Infant Mortality Rate' and 'Percent Medical Facilities' which are in the expected direction, is of 'Infant Mortality Rate'. It is statistically significant at

5 per cent level. It explains that if we decrease 'Infant Mortality' by 1 unit then the equivalent sterilisation increases by 0.007 units. The variable 'Percent Medical Facilities' is also statistically significant at 5 per cent level, and explains that if the percentage of availability of medical facilities increases by 1 unit, then the equivalent sterilisation increases by 0.01 unit. The negative influence of female literacy, female work participation and urban population is quite opposite to our hypothesis, and we are not sure why the regression coefficients for these variables are negative. So, an attempt has been made to find out the influence of other variables, other than the variables 'Female Literacy', 'Female Work Participation' and 'Urban Population'. The results are presented in Table F-1 - Selection 2. Here the value of $\bar{R}^2$ is highest in step 1. The value of $\bar{R}^2$ is 0.186. After this step the value of $\bar{R}^2$ decreases upto step 3. So the regression equation from step 1 is given below:-

$$\text{Equivalent Sterilisation} = 2.32172 - \underset{(-1.432)}{0.00486}\ \text{Infant Mortality Rate}$$

$\bar{R}^2 = 0.186$ $\qquad$ $F = 2.051.$

From the above regression equation, we find that 18.6 per cent of the variation in the equivalent sterilisation has been explained by the independent variables. The

overall goodness of fit indicated by F-value as 2.051 is approximately significant at 5 per cent level. The T-value in the bracket is also insignificant. But the variable is in the expected direction. It explains that 1 unit decrease in the infant mortality leads to an increase of 0.004 units. Thus, the above analysis shows that in 1981, infant mortality rate and availability of medical facilities, have an important role to play in the acceptance of family planning programme.

TABLE E : Results of Regression of Determinants of Family Planning Performance in Punjab 1971 : Selection 1

Variables	Intercept	Regression Coefficient	Standard Error of Estimate	T-Value	$\bar{R}^2$	F-Value
Step 1:						
Medical Facilities	2.32173	-0.04016	0.04700	-0.854	0.075	0.730
Step 2:						
Medical Facilities	4.10427	-0.10255	0.07825	-1.311	0.086	0.802
Infant Mortality		-0.01978	0.01983	-0.998		
Step 3:						
Medical Facilities		-0.11279	0.08614	-1.309		
Infant Mortality	4.44702	-0.02332	0.02257	-1.033	0.003	0.574
Muslim Population		-0.03593	0.08560	-0.420		
Step 4:						
Medical Facilities		-0.11577	0.09128	-1.268		
Infant Mortality		-0.02594	0.02441	-1.063		
Muslim Population	5.04703	-0.06225	0.10419	-0.597	0.099	0.450
Female Work Participation		-0.33857	0.66392	-0.510		
Step 5:						
Medical Facilities		-0.17552	0.10500	-1.672		
Infant Mortality		-0.01286	0.02681	-0.480		
Muslim Population	4.86547	-0.08646	0.10482	-0.825	0.033	0.613
Female Work Participation		-1.67628	1.38330	-1.212		
Urban Population		0.06780	0.06181	1.097		
Step 6:						
Medical Facilities		-0.17995	0.12032	-1.496		
Infant Mortality		-0.01666	0.03830	-0.435		
Muslim Population		-0.08391	0.11793	-0.712		
Female Work Participation	5.08776	-1.69131	1.54466	-1.095	0.232	0.415
Urban Population		0.06437	0.07221	0.892		
Female Literacy		0.00516	0.03259	0.158		

TABLE E-1 : Results of Regression of Determinants of Family Planning Performance in Punjab 1971 . Selection 2

Variables	Intercept	Regression Coefficient	Standard Error of Estimate	T-Value	$\bar{R}^2$	F-Value
Step 1:						
Female Work Participation	2.16758	-0.20247	0.52679	-0.384	0.16	0.148
Step 2:						
Female Work Participation		-0.27407	0.62206	-0.441		
Muslim Population	2.27159	-0.02355	0.09146	-0.257	0.84	0.099
Step 3:						
Female Work Participation		-0.42126	1.01537	-0.415		
Muslim Population		-0.02977	0.10279	-0.290		
Urban Population	2.30821	0.00610	0.03184	0.191	0.213	0.070
Step 4:						
Female Work Participation		-0.55905	1.38038	-0.405		
Muslim Population		-0.02673	0.11232	-0.238		
Urban Population		0.01420	0.06023	0.236		
Infant Mortality	2.00501	0.00461	0.02814	0.164	0.381	0.052
Step 5:						
Female Work Participation		-0.57473	1.51028	-0.381		
Muslim Population		-0.03156	0.12578	-0.251		
Urban Population		0.01990	0.07349	0.271		
Infant Mortality	1.82611	0.00861	0.03838	0.224	0.601	0.041
Female Literacy		-0.00615	0.03541	-0.174		

TABLE F : Results of Regression of Determinants of Family Planning Performance in Punjab 1981 : Selection 1

Variables	Intercept	Regression Coefficient	Standard Error of Estimate	T-Value	R^{-2}	F-Value
Step 1:						
Female Literacy	2.12736	-.01386	.00718	-1.931	.293	3.728
Step 2:						
Female Literacy	2.85227	-.01482	.00630	-2.352	.465	4.308
Infant Mortality		-.00538	.00278	-1.936		
Step 3:						
Female Literacy		-.01740	.00636	-2.735		
Infant Mortality	2.82130	-.00534	.00266	-2.002	.515	3.684
Medical Facilities		-.00523	.00402	1.300		
Step 4:						
Female Literacy		-.02244	.00754	-2.976		
Infant Mortality		-.00452	.00269	-1.681		
Medical Facilities	3.03227	.00649	.00406	1.597	.549	3.255
Female Work Participation		-.03066	.02613	-1.173		
Step 5:						
Female Literacy		-.02806	.00702	-3.995		
Infant Mortality		-.00693	.00261	-2.660		
Medical Facilities	3.98190	0.01038	.00401	2.592	.690	4.374
Female Work Participation		-.05795	.02642	-2.194		
Urban Population		-.01403	.00753	-1.864		
Step 6:						
Female Literacy		-.02819	.00782	-3.604		
Infant Mortality		-.00691	.00290	-2.386		
Medical Facilities	3.98312	.00979	.00513	1.911	.633	2.964
Female Work Participation		-.05579	.03079	-1.812		
Urban Population		-.01377	.00843	-1.633		
Muslim Population		-.00746	.03217	-0.232		

TABLE F-1 : Results of Regression of Determinants of Family Planning Performance in Punjab 1981 : Selection 2

Variables	Intercept	Regression Coefficient	Standard Error of Estimate	T-Value	R^{-2}	F-Value
Step 1:						
Infant Mortality	2.32172	-.00486	.00340	-1.432	.186	2.051
Step 2:						
Infant Mortality	2.27926	-.00482	.00358	-1.347	.109	.987
Medical Facilities		.00180	.00514	0.350		
Step 3:						
Infant Mortality		-.00486	.00382	-1.271		
Medical Facilities	2.26370	.00239	.00643	0.373	.002	.589
Muslim Population		.00805	.04542	0.177		

INTER-DISTRICT VARIATIONS 1971 AND 1981 UTTAR PRADESH

The coefficient of variation for the variable for the State of Uttar Pradesh in 1971 and 1981 is given below in Table - A. The district-wise estimates of variables for 1971 are given in Appendix Table-7, and for 1981 in Appendix Table-8.

Table - A : Coefficient of variation for variables in Uttar Pradesh for 1971 and 1981

Variables	Coefficient of variation	
	1971	1981
1. Equivalent Sterilisation	44.58	49.73
2. Percent Muslim Population	71.62	107.26
3. Percent Female Literacy	51.70	49.54
4. Female Work Participation Rate	142.33	118.13
5. Percent Urban Population	86.60	69.31
6. Infant Mortality	84.92	19.51
7. Medical Facilities	45.04	117.41

From the above Table, and Appendix Tables 7 and 8, the following observations are made:-

The coefficient of variation for the variable 'Equivalent Sterilisation' has increased from 44.58

to 49.73 in 1971 and 1981 respectively. The quivalent sterilisation ranges from 1.85 per cent to 0.30 per cent in the districts of Dehradun and Kheri respectively. In 1981, it ranges from 1.61 per cent in the district of Lucknow to 0.21 in the district of Etah.

Among the independent variables the highest coefficient of variation has been found for the variable 'Female Work Participation'in the year 1971. It ranges from 61.52 per cent in the district of Uttarkashi to 0.8 per cent in Mainpuri district. Again in 1981, the highest coefficient of variation is for the variable 'Female Work Participation'. With regard to 'Female Work Participation' the range of variation is marked by the highest of 53.03 per cent in the district of Tehri Garhwal and the lowest of .76 per cent in Mainpuri district.

The other variable which has a high coefficient of variation in 1981 is percent medical facilities. The value is 117.41. The range of variation is reflected by the highest estimate of 40.18 per cent in the district of Jhansi and lowest of 4.05 in the district of Shahjahanpur.

Similarly the variable 'Percent Muslim Population' has also the high coefficient of variation with a value of 107.26 in 1981. With regard to 'Percent Muslim Population' the range of variation is marked by the highest of 47.22 per cent in Rampur district and the lowest of 0.38 percent

in Uttarkashi district.

The lowest coefficient of variation in 1971 has been found for the variable 'Medical Facilities'. The value is 45.04. The estimates of this variable ranges from the highest of 9.44 percent in the district of Banda to the lowest of 1.17 per cent in the district of Basti. In 1981, the lowest coefficient of variation has been found for the variable 'Infant Mortality'. With regard to infant mortality, the range of variation is marked by the highest of 180 in the district of Badaun to the lowest of 68 in the district of Ballia.

Thus, it has been fownd that the highest coefficient of variation in both the time periods has been for the cariable 'Female Work Participation Rate'. The coefficient of variation for the variables 'Percent Medical Facilities' and 'Percent Muslim Population' has increased in 1981. The lowest coefficient of variation is for the variable 'Medical Facilities' in 1971 and in 1981 it is for the variable 'Infant Mortality'.

CORRELATION ANALYSIS 1971 AND 1981

In Table-1 and Table-2, we have presented the zero-order correlation coefficient matrix for Uttar Pradesh for the year 1971 and 1981 respectively.

(A) Correlation between Dependent and Independent Variables : 1971

Among all the independent variables, the highest coefficient of correlation has been found for the variable 'Percent Female Literacy'. The value of coefficient is 0.465. It is statistically significant at 1 per cent level. It means that higher the female literacy, higher will be the family planning performance.

The correlation coefficient between 'Percent Urban Population' and equivalent sterilisation is 0.431 and is statistically significant at 1 per cent level. It means that those districts where the percentage of urban population is high, there the family planning performance is also high.

The variable 'Female Work Participation Rate' is positively correlated with the equivalent sterilisation (0.190) and is statistically significant at 10 per cent level. Lack of significance of this coefficient requires explanation. According to the hypothesis formulated, female participation in the economic activity leave less time for child-rearing, besides modernising their outlook, and thus increases opportunity cost of additional children and promotes small family norms. In Uttar Pradesh,

it does not appear to be so. Partly it may be due to the type of economic activity in which the females are employed. Negative correlation coefficients of this variable with percent female literacy (-0.116), percent urban population (-0.335) indicate that bulk of female employment is generated in agricultural sector and higher female participation in economic activity indicates predominance of agricultural sector, where child-rearing is not much of an obstacle to their participation in economic activity. Moreover, in agricultural milieu additional children are still considered an asset, as helping hands in agricultural operations. Thus, larger female participation does not appear to promote small family norms and family planning acceptance in Uttar Pradesh.

The correlation coefficient between per cent medical facilities and equivalent sterilisation is 0.130. Statistically it is significant only at 20 percent level. The only valid conclusion could be that it is not necessary for districts with higher percentage of medical facilities to achieve higher family planning acceptance.

The variable 'Infant Mortality Rate' is positively correlated with the equivalent sterilisation. The coefficient value is 0.093. But statistically it is insignificant even at 20 per cent level. Though its positive relation with

equivalent sterilisation explains that higher the infant mortality rate, higher will be the family planning acceptance rate. But its statistically insignificant relation with equivalent sterilisation means that it is not necessary for districts with higher mortality (infant) need not achieve higher family planning acceptance. Similarly these districts need not necessarily be worse in family planning performance.

The correlation coefficient between 'Percent Muslim Population' and equivalent sterilisation is 0.015, and is statistically insignificant even at 20 per cent level. The only valid conclusion could be that this variable does not significantly influence family planning acceptance, either negatively or positively.

(B) Correlation among Independent Variables : 1971

Among all the independent variables, the highest positive correlation has been found between 'Percent Female Literacy' and 'Percent Urban Population'. The coefficient value is 0.793. It is statistically significant at 1 per cent level. It explains that in the urban areas, the proportion of female literates is high.

The coefficient of correlation between 'Percent Muslim Population' and 'Percent Female Work Participation' is -0.541. It is statistically sigmificant at 1 per cent level. It explains that in a district where the proportion

of Muslim population is high, female work participation in the economic activity is low.

Positive association has been found between the variables 'Infant Mortality Rate' and 'Female Literacy'. The coefficient value is 0.439 and is statistically significant at 1 per cent level. It gives us the wrong relationship between the infant mortality rate and female literacy.

The coefficient of correlation between 'Percent Urban Population' and 'Infant Mortality Rate' is 0.412. Though it is statistically significant at 1 per cent level, but the relationship is not in the expected direction.

Negative association has been found between the variables 'Percent Female Work Participation' and 'Percent Urban Population' with a coefficient value as -0.335, though statistically significant at 1 percent level. It means that in the urban areas female participation in the economic activity goes down.

TABLE 1 : Zero-order Correlation Coefficients 1971, Uttar Pradesh

Variables	Per Cent Equivalent Sterilisation	Infant Mortality Rate	Per Cent Muslim Population	Per Cent Female Literacy	Per Cent Female Work Participation	Per Cent Urban Population	Per Cent Medical Facilities
Per Cent Equivalent Sterilisation	1.000						
Infant Mortality Rate	.093	1.000					
Per Cent Muslim Population	.015	-.080	1.000				
Per Cent Female Literacy	.465	.439	-.116	1.000			
Per Cent Female Work Participation	.190	.074	-.541	-.116	1.000		
Per Cent Urban Population	.431	.412	.261	.793	-.335	1.000	
Per Cent Medical	.130	.068	-.163	.177	.004	.248	1.000

(C) Correlation between Dependent and Independent Variables : 1981

Among all the independent variables, the highest coefficient of correlation has been found for the variable 'Percent Female Literacy'. The value of coefficient is 0.541.It is statistically significant at 1 per cent level. It means that districts with higher female literacy are likely to have higher acceptance of family planning.

The correlation coefficient between 'Percent Urban Population' and equivalent sterilisation is 0.445,and is statistically significant at 1 per cent level. It means that districts with higher percentage of population will achieve higher family plnanning acceptance rate.

The variable 'Infant Mortality Rate' is negatively correlated with the equivalent sterilisation. The value of coefficient is -0.367. It is statistically significant at 1 per cent level. It means that lower the infant mortality rate, higher will be the family planning acceptance rate.

The correlation coefficient between per cent medical facilities and equivalent sterilisation is 0.205. It is statistically significant at 5 per cent level. It indicates that higher the availability of medical facilities, the higher will be the acceptance of family planning.

The variable 'Percent Muslim Population' has a negative correlation with equivalent sterilisation.

The coefficient value is -0.047. It is statistically insignificant, which means that though the variable suits well with our hypothesis but its statistically insignificant relation with equivalent sterilisation concludes that this variable does not significantly influence family planning acceptance either positively or negatively.

The variable 'Female Work Participation Rate' is positively correlated with equivalent sterilisation. The coefficient value is 0.089. It is statistically insignificant at 20 per cent level. Thus, this variable also does not influence family plnanning acceptance either positively or negatively.

(D) Correlation among Independent Variables : 1981

In 1981, among all the independent variables, the highest coefficient of correlation has been found between 'Percent Female Literacy' and 'Percent Urban Population'. The coefficient value as 0.657 which is statistically significant at 1 per cent level, depicts positive relationship between the two.

The coefficient of correlation between 'Infant Mortality Rate' and 'Percent Female Literacy' is -0.530. It is also statistically sighificant at

1 per cent level. It explains that with the increase in the female literacy rate infant mortality goes down.

Negative association has been found between 'Percent Female Work Participation' and 'Percent Urban Population'. The coefficient value is -0.411. It is statistically significant at 1 per cent level. It means that in Uttar Pradesh, female participation in the economic activity decreases in the urban areas.

The coefficient of correlation between 'Infant Mortality Rate' and 'Percent Female Work Participation' is -0.304, and statistically significant at 1 per cent level.

It means that higher the female work participation, lower the infant mortality.

TABLE 2 : Zero-order Correlation Coefficients 1981, Uttar Pradesh

Variables	Per Cent Equivalent Sterilisation	Infant Mortality Rate	Per Cent Muslim Population	Per Cent Female Literacy	Per Cent Female Work Participation	Per Cent Urban Population	Per Cent Medical Facilities
Per Cent Equivalent Sterilisation	1.000						
Infant Mortality Rate	-.367	1.000					
Per Cent Muslim Population	-.047	.002	1.000				
Per Cent Female Literacy	.541	-.530	-.157	1.000			
Per Cent Female Work Participation	.089	-.304	-.268	.039	1.000		
Per Cent Urban Population	.445	-.215	.120	.657	-.411	1.000	
Per Cent Medical Facilities	.205	.004	.013	.090	-.208	.206	1.000

REGRESSION ANALYSIS 1971 AND 1981

The results of multiple step-wise regression analysis for the year 1971 are presented in Table G and G-1, and for the year 1981 in Table H.

The variables that have been used for explaining the differential performance of family planning in 1971 and 1981 are the same as have been used for the States of Andhra Pradesh and Punjab.

From the results of 1971 from Table G - Selection 1, it has been found that the value of $\bar{R}^2$ is highest in the step 4 and after that it decreases to 0.330 in step 5. A similar decrease can be observed after step 5. So, the regression equation from step 4 is given below:-

Equivalent Sterilisation =	0.17134	+ 0.04126 (4.871)	Percent Female Literacy
		+ 0.01127 (3.217)	Female Work Participation Rate
		+ 0.01141 (2.290)	Percent Muslim Population
		- 0.00212 (-1.528)	Infant Mortality Rate

$\bar{R}^2 = 0.331$ F = 7.152

From the above regression equation, we find that 33 percent of the variation has been explained by the independent variables. The overall goodness of fit indicated by F-value as 7.152 is statistically quite significant at 1 percent level.

From the T-values in the brackets, we find that the variable 'Percent Female Literacy' has the highest regression coefficient

and is statistically significant at 1 percent level, for explaining the variation in the dependent variable. It explains that if we increase 'Percent Female Literacy' by one unit, then the equivalent sterilisation increases by 0.04 units. The other variable which is statistically significant at 1 per cent level is the 'Percent Female Work Participation.' It explains that if we increase 'Female Work Participation' in the economic activities by one unit, then the equivalent sterilisation increases by 0.01 units. The positive influence of the variable 'Percent Muslim Population' is quite opposite to our hypothesis, and we are not sure why the regression coefficient for Muslim Population is positive. Though the variable 'Infant Mortality Rate' is in the expected direction, that is, lower the infant mortality in a district, higher will be the family planning performance. But statistically this variable is only significant at 20 per cent level.

An attempt has been made to find out the influence of other variables on family planning acceptance, other than the variables 'Percent Muslim Population' and 'Infant Mortality Rate'. The results are presented in Table G-1, Selection 2. The table shows that the value of $\bar{R}^2$ is highest in the step 2. The value of $\bar{R}^2$ is 0.262. After this step, the value of $\bar{R}^2$ decreases to 0.249 in step 3. So the regression equation from step 4 is as given below:-

Equivalent
Sterilisation = 0.39960 + 0.03184 (4.110) Percent Female Literacy

+ 0.00619 (2.056) Female Work Participation

$\bar{R}^2$ = 0.262 F = 9.711.

From the regression equation, we find that 26.2 per cent of the variation in the equivalent sterilisation has been explained by the variables 'Percent Female Literacy' and 'Female Work Participation'. The overall goodness of fit indicated by F-value as 9.711 is statistically significant at 1 per cent level.

From the T-values in the brackets, we find that the highest regression coefficient is of the variable 'Percent Female Literacy'. It is statistically significant at 1 per cent level. It explains that 1 percentage increase in 'Female Literacy' increases the equivalent sterilisation by 0.03 units. The other variables 'Female Work Participation' is statistically significant only at 5 per cent level, and explains that 1 per cent increase in the 'Female Work Participation' increases the equivalent sterilisation by 0.03 points. Thus, in 1971 in the State of Uttar Pradesh, it has been found that female literacy plays an important role in promoting family planning programme.

From the results of 1981 from Table H, it has been found that the value of $\bar{R}^2$ decreases after the step 2. So, to form a regression equation we are taking step 2. The value of $\bar{R}^2$ is 0.304. The regression equation is given below:-

$$\text{Equivalent Sterilisation} = 0.2272 + \underset{(4.533)}{0.02036}\ \text{Percent Female Literacy} + \underset{(1.357)}{0.00453}\ \text{Percent Medical Facilities}$$

$\bar{R}^2 = 0.304$ $\qquad$ $F = 11.845.$

The regression equation shows that only 30.4 per cent of the variation in the dependent variable has been explained by the selected independent variables. The overall goodness of fit indicated by F-value as 11.845 is statistically significant at 1 per cent level.

From the T-values in the brackets, we find that out of the two variables, namely, 'Percent Female Literacy' and 'Percent Medical Facilities', the highest regression coefficient is of 'Percent Female Literacy' and it is statistically significant at 1 per cent level explaining that if we increase 'Percent Female Literacy' by 1 unit the equivalent sterilisation increases by 0.02 units. The variable 'Medical Facilities' is statistically significant only at 20 per cent. It explains that holding the other variables constant,one unit increase in the availability of medical facilities increases the equivalent sterilisation by 0.004 units. Thus, again in 1981 female literacy has its importance in explaining differential family planning performance.

To sum up the results of 1971 and 1981, it has been found that in the State of Uttar Pradesh, percent female literacy exercises the largest positive influence on family planning acceptance.

TABLE - G : Results of Regression of Determinants of Family Planning Performance in Uttar Pradesh 1971 : Selection 1

Variables	Intercept	Regression Coefficient	Standard Error of Estimate	T-Value	$\bar{R}^2$	F-Value
Step 1:						
Female Literacy	.48140	.03000	.00793	3.782	.216	14.307
Step 2:						
Female Literacy	.39960	.03184	.00775	4.110	.262	9.711
Female Work Participation		.00619	.00301	2.056		
Step 3:						
Female Literacy		.03540	.00766	4.625		
Female Work Participation	.16577	.01048	.00351	2.986	.313	8.529
Muslim Population		.01097	.00504	2.177		
Step 4:						
Female Literacy		.04126	.00847	4.871		
Female Work Participation		.01127	.00350	3.217		
Muslim Population	.17134	.01141	.00498	2.290	.331	7.152
Infant Mortality		-.00212	.00139	-1.528		
Step 5:						
Female Literacy		.02574	.01439	1.789		
Female Work Participation		.01191	.00351	3.394		
Muslim Population	.26534	.00790	.00560	1.410	.330	6.164
Infant Mortality		-.00247	.00140	-1.760		
Urban Population		.00981	.00738	1.329		
Step 6:						
Female Literacy		.02664	.01482	1.797		
Female Work Participation		.01194	.00314	3.368		
Muslim Population		.00844	.00593	1.424		
Infant Mortality	.22691	-.00244	.00142	-1.717	.329	5.05
Urban Population		.00901	.00789	1.141		
Medical Facilities		.00791	.02583	.306		

TABLE - G-1 : Results of Regression of Determinants of Family Planning Performance in Uttar Pradesh 1971 : Selection 2

Variables	Intercept	Regression Coefficient	Standard Error of Estimate	T-Value	R^{-2}	F-Value
Step 1:						
Female Literacy	.48140	.03000	.00793	3.782	.216	14.307
Step 2:						
Female Literacy	.39960	.03184	.00775	4.110	.262	9.711
Female Work Participation		.00619	.00301	2.056		
Step 3:						
Female Literacy		.03133	.00794	3.945		
Female Work Participation	.37087	.00616	.00304	2.029	.249	6.405
Medical Facilities		.00901	.02544	.354		

TABLE - H : Results of Regression of Determinants of Family Planning Performance in Uttar Pradesh 1981

Variables	Intercept	Regression Coefficient	Standard Error of Estimate	T-Value	$\bar{R}^2$	F-Value
Step 1:						
Female Literacy	.25725	.02091	.00451	4.637	.293	21.502
Step 2:						
Female Literacy	.22772	.02036	.00449	4.533	.304	11.845
Female Work Participation		.00453	.00334	1.357		
Step 3:						
Female Literacy		.01781	.00532	3.350		
Female Work Participation	.44069	.00471	.00335	1.407	.302	8.139
Muslim Population		-.00139	.00154	-.902		
Step 4:						
Female Literacy		.01337	.00701	1.908		
Female Work Participation	.48691	.00409	.00341	1.200	.301	6.334
Muslim Population		.00169	.00157	-1.078		
Infant Mortality		.00373	.00384	.972		
Step 5:						
Female Literacy		.01056	.00724	1.458		
Female Work Participation		.00467	.00341	1.371		
Muslim Population	.34381	-.00110	.00162	-.682	.314	5.534
Infant Mortality		.00705	.00451	1.563		
Urban Population		.00385	.00280	1.372		
Step 6:						
Female Literacy		.01084	.00768	1.411		
Female Work Participation		.00469	.00345	1.361		
Muslim Population		-.00106	.00167	-.634		
Infant Mortality	.33125	.00694	.00465	1.492	.300	4.520
Urban Population		.00391	.00288	1.357		
Medical Facilities		.00021	.00175	.120		

COMPARATIVE PERFORMANCE - REGRESSION ANALYSIS

According to Regression results for all the four States individually, we have found that

(1) In the State of Kerala, in 1971, 'Percent Urban Population' has been found to exercise the largest positive influence on family planning acceptance, which means that in the urban areas the residents are less traditional minded and less subject to village taboo and religious practices. Further, people are educated and have exposure to mass media which helps them to prevent high fertility.

But in 1981, only 'Percent Female Literacy' is the sole determinant of family planning performance, which means that in Kerala, the social awakening of women is high which helps in clearing the mist of ignorance about family planning methods.

(2) In the State Punjab, in 1971 no variable is statistically significant to explain differential family planning performance.

But in 1981, the largest influence on family planning acceptance has been found through the variable 'Infant Mortality', followed by the 'Medical Facilities'.

(3) In Andhra Pradesh, in both the time periods, 'Percent Female Literacy Rate' has the largest positive influence on family planning.

(4) In Uttar Pradesh, in 1971 and 1981, 'Percent Female Literacy' has been found to be an important determinant of family planning acceptance.

To sum up the results, we can say that in the better performing States i.e. Kerala and Punjab, the variables 'Percent Urban Population', 'Female Literacy', 'Infant Mortality', and 'Medical Facilities' are playing an important role in promoting family planning programme. But in the poor performing States,choosen as Andhra Pradesh and Uttar Pradesh, it is the 'Percent Female Literacy' which has the largest influence on acceptance of family planning programme.

So, in general, if family planning acceptance has to be increased, it is necessary to educate the females in those States where the family planning performance is poor.

CHAPTER 5.
CONCLUSION

In the previous chapter, we have tried to find out the variables that have an impact on family planning performance, and in terms of regression results that we have found, we should try to adopt the following measures to increase the family planning acceptance in India.

(1) The status of women in terms of education has to be improved, as education is the key that opens the door to life which is essentially social in character. Public opinion has to be created which will make imperative for every parent to see that not only his sons, but his daughters too go to schools and that his sole concern should not be to get her married to the first bachelor - eligible or otherwise - that comes his way. And this kind of public opinion can be best generated by voluntary agencies which work at the grass root of the community.

(2) Further, the status of women in terms of employment, has to be improved. Employment opportunities have to be provided in the small scale industries. Further, the disintegration of the joint family system stands in the way of useful employment by women because they do not find support of other

elderly ladies in the home to look after their children when they are at work. So facilities for looking after their children in a situation like this, have to be improved.

(3) Infant mortality has to be checked fully, as higher levels of infant mortality tend to inhibit wide family planning acceptance and uncontrolled fertility behaviour generally makes it difficult for the couples to bear nutritional, medical, and health expenses required for all the children which again results in high levels of infant mortality and the high level of mortality further motivates the couples not to adopt birth control practices. In India, large number of people will be found with the opinion like, that many diseases are not caused by inhyginic living conditions and infection, but by gods or goddess or by pre-determined fate. So, these people should be convinced that they are really ignorant about the truth of the disease and if they try to understand such realities they can further understand the mystry of their happiness. The villages should be explained the truths of infant deaths with simple and interesting illustrations. Further, there should be effective implementation of MCH and immunisation activities. Rural and urban areas should be covered by involving medical colleges, voluntary organisations and

local Government bodies. Monitoring of information and performance should be done more effectively. Prevention of malnutrition in pregnant mothers, should be given a higher priority.

(4) Medical facilities have to be geared up both in the rural and urban areas. All the primary health centres should be well equipped to render services like vasectomy, mini-lap and medical termination of pregnancy. Further, vehicles should be provided to every primary health centres. Necessary supplies of equipment, availability of surgical instruments, refrigerators, vaccines,etc. is to be ensured. Social marketing programme for contraception and community based contraceptive distribution system should be organised. Further, all urban and rural areas should be covered by providing integrated services of family welfare and maternal and child health programme. Last but not the least, a certain amount of discretionary fund should be placed at the disposal of each State and Union Territory.

Besides the above measures, there is a strong case for integration of social programmes into overall development strategy in order to achieve the objective of reducing the fertility rate. The imbalance between social and economic

components of development processes have to be removed. Population control can no longer be the responsibility of one Ministry or Department. It has to be total Governmental approach and effort reflecting the total and complete political and administrative commitment of the Government across the board embracing all governmental agencies, developmental and non-developmental. The entire planning process must be geared towards controlling population. Every action of Government must be evaluated in terms of its impact on population. All Ministries, departments and agencies, must accept population stabilisation as one of their main objectivesand reflect it in their programmes, in their messages, in their extensive work and in their normal day to day activities. The Planning Commission must review the performance of States in terms of their efforts to stabilise the population and evaluate the activities of various departments in terms of their contribution towards holding population growth. The planning and development process of this country must indicate the adoption of small family norm as the objective of all programmes. The governmental agencies must also communicate to non-governmental agencies in the country the need to spread the message of small family norm. Further, for fuller community participation, popular committees are to be set up at various levels from State, District and down to Block. Special schemes should be developed for involvement of organisations

of women and youth such as Mahila Mandals and Youth Clubs. A village level Women Voluntary Corps should be organised whose members will interact with eligible couples in the respective areas and provide them with knowledge of health, family planning, immunisation and nutrition.

Lastly, it may be mentioned that only co-operative and dedicated efforts on the part of the Government and people, will go a long way in solving the population problem of the country.

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TABLE 1 : District-wise estimates of variables for Kerala 1971

Districts	Per Cent Equivalent Sterilisation	Per Cent Female Literacy	Per Cent Christian Population	Per Cent Urban Population	Per Cent Female Work Participation (main activity)	Infant Mortality (per 1000 population)	Per Cent Villages with Medical Facili
Ernakulam	5.39	60.15	41.53	27.56	12.27	15	100.00
Trivandrum	3.17	56.48	17.26	26.00	11.77	13	93.33
Quilon	2.35	59.84	23.50	7.87	12.87	13	96.94
Alleppy	2.31	65.79	27.63	16.92	13.59	14	100.00
Kottayam	1.76	63.59	46.92	10.22	12.16	22	94.06
Trichur	1.63	57.23	25.18	11.74	15.91	11	73.16
Kozhikode	1.44	48.56	7.15	26.66	9.49	24	94.50
Cannanore	1.04	46.62	9.39	13.74	14.73	17	90.45
Palghat	0.90	39.22	2.69	12.70	23.42	25	83.33
Malapuram	0.64	40.78	1.99	6.73	10.16	21	91.45

TABLE 2 : District-wise estimates of variables for Kerala 1981

Districts	Per Cent Equivalent Sterilisation	Per Cent Female Literacy	Per Cent Christian Population	Per Cent Urban Population	Per Cent Female Work Participation (main workers plus marginal workers)	Infant Mortality (per 1000 population)	Villages with Medical Facility (per lakh population)
Trivandrum	3.25	65.85	17.70	25.26	14.76	52	3.74
Kottayam	2.76	79.35	47.48	9.37	12.95	59	3.83
Quilon	2.79	70.21	22.66	13.15	15.98	46	3.45
Alleppy	2.49	75.10	27.03	15.89	20.41	38	3.83
Kozhikode	2.69	63.82	4.80	27.18	9.77	54	2.81
Trichur	2.70	70.21	25.10	21.10	18.68	52	3.85
Ernakulam	2.42	72.88	40.20	39.56	16.21	40	3.83
Cannanore	1.51	59.48	9.55	23.39	20.94	45	4.64
Palghat	1.11	51.55	3.75	10.11	24.20	64	3.75
Malapuram	1.01	55.34	2.38	7.40	10.97	49	2.38
Wynad	0.00	51.51	24.46	N.A.	24.54	108	5.23
Idukki	0.00	62.55	43.15	4.59	23.81	103	4.73

TABLE 3 : District-wise estimates of variables for Andhra Pradesh 1971

Districts	Per Cent Equivalent Sterilisation	Per Cent Female Literacy	Per Cent Muslim Population	Per Cent Urban Population	Per Cent Female Work Participation (main activity)	Infant Mortality (per 1000 population)	Per Cent Villages with Medical Facility
1.	2.	3.	4.	5.	6.	7.	8.
Hyderabad	5.32	30.2	26.45	65.9	16.6	50	2.67
Visakhapatnam	5.30	12.9	1.31	22.3	21.8	74	1.27
Guntur	4.94	21.8	10.08	25.0	23.2	39	11.70
Srikakulam	4.17	9.6	0.27	10.7	26.5	61	3.92
Krishna	4.47	28.4	5.70	27.3	19.4	48	13.52
Medak	4.24	6.9	11.16	8.5	30.3	36	6.29
East Godavari	2.97	24.3	1.47	19.2	17.8	46	5.68
West Godavari	3.46	28.3	2.15	17.7	21.9	41	23.20
Nellore	3.58	18.3	7.21	15.8	23.6	34	11.80
Chittoor	2.90	14.4	11.19	13.5	21.7	37	13.31
Nizamabad	2.92	8.2	11.69	15.9	31.5	46	9.56
Kurnool	2.19	12.7	16.69	20.3	28.5	38	10.61
Anantapur	2.09	17.8	11.02	17.8	26.0	37	28.93

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1.	2.	3.	4.	5.	6.	7.	8.
Karimnagar	1.83	6.6	4.90	10.7	31.4	23	2.29
Chuddapah	2.21	12.7	10.95	14.2	20.9	26	12.19
Warangal	2.24	9.5	5.31	13.4	25.3	35	6.20
Adilabad	1.44	6.5	8.40	15.9	35.1	30	1.87
Khammam	1.74	11.6	5.70	13.6	23.1	28	3.69
Nalgonda	1.52	8.8	5.11	6.7	27.5	32	6.35
Mahbubnagar	1.27	7.7	8.80	9.0	34.1	33	2.27
Ongole	0.00	13.0	7.05	11.1	23.7	44	9.41

TABLE 4 : District-wise estimates of variables for Andhra Pradesh 1981

Districts	Per Cent Equivalent Sterilisation	Per Cent Female Literacy	Per Cent Muslim Population	Per Cent Urban Population	Per Cent Female Work Participation (main workers plus marginal workers)	Infant Mortality (per 1000 population)	Per Cent Villages with Medical Facility
1.	2.	3.	4.	5.	6.	7.	8.
Nellore	4.61	23.09	8.88	20.76	33.5	86	28.74
East Godavari	2.96	28.86	1.49	22.21	27.36	77	29.23
West Godavari	3.39	31.59	2.11	20.77	27.36	84	39.09
Guntur	3.06	26.60	10.43	27.53	35.89	80	45.81
Prakasam	2.81	18.01	6.93	14.99	39.31	89	93.84
Visakhapatnam	2.05	18.99	1.69	31.28	29.25	97	10.18
Srikakulam	1.99	13.02	0.25	10.89	39.29	123	9.68
Cuddapah	1.86	17.77	14.82	19.37	31.45	105	23.88
Chittoor	2.05	20.24	8.64	16.88	31.75	115	34.39
Krishna	2.15	34.61	6.09	32.54	27.92	92	34.18
Nizamabad	1.81	11.70	13.01	19.21	44.39	70	29.80
Hyderabad	1.73	49.22	35.91	100.00	6.55	N.A.	N.A.

Contd...

۹.	2.	3.	4.	5.	6.	7.	8.
Nalgonda	1.80	13.00	5.28	11.38	39.43	90	52.83
Warangal	2.21	13.61	5.59	17.24	38.17	99	24.97
Khammam	2.29	17.68	5.88	16.98	32.63	87	22.25
Kurnool	1.59	17.06	16.95	74.49	36.96	96	24.44
Anantpur	1.49	16.52	11.27	20.84	34.04	121	22.62
Karimnagar	1.44	11.07	5.53	15.79	42.05	81	24.76
Vizianagaram	0.00	12.55	0.67	15.94	37.13	97	11.70
Rangaradi	0.00	19.28	11.27	23.83		82	23.08
Medak	1.18	10.87	11.16	11.97	40.42	82	16.04
Mahbubnagar	1.11	10.56	8.92	10.93	44.77	99	16.05
Adilabad	0.97	9.58	8.54	19.34	35.43	95	9.81

TABLE 5 : District-wise estimates of variables for Punjab 1971

Districts	Per Cent Equivalent Sterilisation	Per Cent Female Literacy	Per Cent Muslim Population	Per Cent Urban Population	Per Cent Female Work Participation (main activity)	Infant Mortality (per 1000 population)	Per Cent Villages with Medical Facility
Kapurthala	2.55	27.99	0.19	23.21	1.08	54	10.61
Ferozepur	2.51	20.30	0.33	19.84	1.06	66	8.23
Gurdaspur	2.23	26.20	0.55	20.26	1.13	65	7.77
Ropar	2.03	27.01	0.54	15.15	1.02	75	6.20
Patiala	1.92	23.92	1.12	26.03	1.43	57	6.97
Sangrur	1.89	17.01	5.62	20.31	0.82	51	10.72
Ludhiana	1.80	35.43	0.39	34.81	1.43	51	13.62
Amritsar	1.79	28.74	0.16	29.17	1.41	48	11.94
Jullundur	1.57	33.38	0.23	30.06	1.41	63	10.92
Bhatinda	1.54	15.78	0.29	20.00	0.88	50	12.43
Hoshiarpur	1.44	30.51	0.32	12.09	1.10	76	7.40

TABLE 6 : District-wise estimates of variables for Punjab 1981

Districts	Per Cent Equivalent Sterilisation	Per Cent Female Literacy	Per Cent Muslim Population	Per Cent Urban Population	Per Cent Female Work Participation (main workers plus marginal workers)	Infant Mortality (per 1000 population)	Per Cent Villages with Medical Facil
Patiala	1.90	33.70	1.41	29.59	4.68	95	17.81
Sangrur	1.60	22.68	6.34	22.81	8.55	138	N.A.
Ludhiana	1.87	44.15	0.51	42.01	5.03	123	29.02
Rupnagar	1.93	38.94	1.07	21.5	5.64	125	21.50
Kapurthala	1.85	38.27	0.50	29.9	4.34	109	21.60
Bhatinda	1.82	20.29	0.50	22.68	10.81	142	44.42
Ferozepur	1.75	24.17	0.13	22.7	7.77	132	N.A.
Jalandhar	1.39	42.26	0.31	35.32	4.75	122	25.12
Hoshiarpur	1.36	41.19	0.52	14.4	6.92	143	19.07
Gurdaspur	1.63	35.99	0.62	21.6	3.2	163	17.28
Amritsar	1.53	34.40	0.10	32.97	4.53	129	27.71
Faridkot	0.00	26.87	0.36	23.92	8.82	108	42.48

TABLE 7 : District-wise estimates of variables for Uttar Pradesh 1971

Districts	Per Cent Equivalent Sterilisation	Per Cent Female Literacy	Per Cent Muslim Population	Per Cent Urban Population	Per Cent Female Work Participation (main activity)	Infant Mortality (per 1000 population)	Per Cent Villages with Medical Facility
1.	2.	3.	4.	5.	6.	7.	8.
Dehra Dun	1.85	33.40	8.07	47.08	3.52	13	5.87
Chamoli	1.67	9.59	0.66	4.1	60.5	53	4.17
Gorakhpur	1.54	8.20	10.76	7.90	10.5	23	3.11
Varanasi	1.40	13.28	10.64	25.13	7.9	36	2.80
Lucknow	1.40	24.52	19.78	50.90	3.6	115	4.52
Pithoragarh	1.36	14.63	0.38	3.9	31.9	38	4.41
Nainital	1.35	20.17	13.25	22.13	7.7	30	3.90
Rampur	1.29	7.17	45.76	19.53	0.9	45	2.38
Fatehpur	1.10	8.90	11.92	5.63	11.5	50	3.70
Bulandshahr	1.08	9.16	18.19	13.33	1.5	N.A.	4.59
Mirzapur	1.07	8.08	5.51	12.03	5.2	21	2.25
Mathura	1.05	10.51	6.56	16.49	2.0	35	8.82
Ghazipur	1.03	9.29	9.48	4.50	10.8	29	1.47
Agra	0.98	16.52	9.96	36.61	1.4	60	6.85
Ballia	0.97	9.80	5.38	4.58	8.8	4	6.59

contd....

1.	2.	3.	4.	5.	6.	7.	8.
Bijnor	0.97	10.58	36.66	18.10	1.3	78	2.95
Muzaffarnagar	0.94	12.65	28.83	13.86	1.7	42	6.26
Kanpur	0.89	25.37	12.24	42.80	2.8	228	4.74
Uttarkashi	0.89	5.37	0.38	4.0	61.52	70	6.70
Bareilly	0.85	9.92	29.20	22.28	0.96	10	4.01
Meerut	0.84	16.01	22.13	24.26	1.7	44	3.66
Azamgarh	0.84	8.21	14.07	5.21	9.6	23	1.58
Saharanpur	0.83	13.52	31.11	23.50	1.5	30	3.97
Partapgarh	0.80	6.02	11.79	1.96	11.9	55	2.51
Moradabad	0.79	9.54	38.15	23.77	1.3	28	2.44
Faizabad	0.68	8.09	12.27	9.56	9.1	45	3.09
Almora	0.68	11.53	0.51	5.1	29.8	38	2.21
Unnao	0.67	9.09	9.08	2.57	4.1	46	3.07
Hamirpur	0.67	7.80	6.64	9.91	10.2	31	5.59
Deoria	0.72	6.03	16.17	2.96	7.7	1	1.74

Contd....

1.	2.	3.	4.	5.	6.	7.	8.
Allahabad	0.63	10.76	12.96	18.46	12.45	27	3.20
Shahjahanpur	0.62	8.31	16.14	15.24	1.5	36	1.68
Pilibhit	0.60	7.78	21.62	13.67	1.1	N.A.	4.15
Barabanki	0.60	5.54	19.99	5.76	6.2	35	3.23
Jaunpur	0.59	8.80	8.31	6.21	7.50	24	1.67
Bahraich	0.58	4.28	26.99	5.93	3.7	42	5.20
Tehri Garhwal	0.58	4.92	0.48	2.6	50.4	25	3.01
Jalaun	0.57	12.40	8.20	13.75	3.9	42	4.71
Badaun	0.55	5.85	18.45	9.35	1.04	38	4.05
Hardoi	0.53	8.86	11.31	7.90	1.6	56	2.88
Basti	0.52	5.18	20.30	2.52	10.42	43	1.17.
Etawah	0.51	16.61	6.13	9.79	1.3	67	3.66
Etah	0.55	10.27	10.27	9.82	0.9	42	3.48
Gonda	0.53	4.74	22.57	5.65	7.1	26	3.52
Mainpuri	0.56	12.83	4.83	8.44	0.8	39	2.82

Contd....

1.	2.	3.	4.	5.	6.	7.	8.
Rae Barelly	0.49	7.41	10.02	3.40	7.4	3	4.58
Jhansi	0.47	12.72	5.07	24.58	5.8	18	4.49
Farrukhabad	0.45	13.85	12.72	10.91	1.26	37	4.18
Aligarh	0.42	12.65	12.39	17.85	1.35	54	3.03
Sitapur	0.40	7.03	16.46	7.54	7.0	31	3.22
Garhwal	0.39	16.52	1.61	6.4	43.4	57	1.52
Sultanpur	0.37	6.72	12.93	1.97	9.6	32	3.57
Banda	0.36	5.84	5.82	8.29	11.98	26	9.44
Kheri	0.30	6.40	17.24	6.21	1.4	16	3.38

TABLE 8 : District-wise estimates of variables for Uttar Pradesh 1981

Districts	Per Cent Equivalent Sterilisation	Per Cent Female Literacy	Per Cent Muslim Population	Per Cent Urban Population	Per Cent Female Work Participation (main workers plus marginal workers)	Infant Mortality (per 1000 population)	Per Cent Villages with Medical Facility
1.	2.	3.	4.	5.	6.	7.	8.
Pithoragarh	1.06	20.30	0.40	5.52	44.81	121	8.14
Lucknow	1.61	29.71	19.67	52.6	4.87	101	N.A.
Barabanki	0.67	7.21	20.45	8.93	6.55	136	N.A.
Chamoli	0.59	18.34	0.43	8.01	52.03	143	N.A.
Nainital	1.15	27.10	12.92	17.95	11.67	108	7.36
Rae Barelly	0.70	10.47	10.18	7.37	15.05	172	N.A.
Jhansi	1.15	21.38	8.40	37.94	9.64	120	40.18
Fatehpur	0.67	12.48	12.86	8.99	13.08	111	19.57
Rampur	0.46	8.88	47.22	26.74	1.37	150	4.49
Moradabad	0.32	10.93	38.06	26.95	1.72	147	6.91
Almora	0.61	20.27	0.58	6.28	36.62	82	N.A.
Sultanpur	0.82	9.37	12.95	3.30	10.04	151	10.31
Uttarkashi	0.55	9.17	0.38	6.95	51.32	113	12.26
Partapgarh	0.83	7.21	20.45	5.05	9.52	134	N.A.

contd....

1.	2.	3.	4.	5.	6.	7.	8.
Dehradun	1.04	42.03	8.32	48.86	10.66	88	11.57
Muzaffarnagar	0.76	17.50	28.74	21.72	2.37	129	34.74
Allahabad	0.85	12.81	12.77	20.37	10.02	110	10.61
Saharanpur	0.66	18.06	31.57	27.08	2.3	133	17.71
Garhwal	0.37	27.13	2.11	9.82	42.79	94	N.A.
Tehri Garhwal	0.37	9.42	0.48	4.13	53.03	132	6.25
Shahjahanpur	0.38	10.79	16.56	19.38	1.1	167	4.05
Kanpur	0.78	31.95	12.48	46.32	3.63	91	9.60
Mirzapur	0.80	10.62	5.42	13.13	16.08	105	N.A.
Ghazipur	0.53	13.63	10.08	7.93	9.65	111	4.92
Jalaun	0.96	18.96	8.91	19.92	8.27	115	29.29
Etawah	0.46	23.58	6.34	14.79	1.39	117	9.23
Bulandshahr	0.49	13.34	19.37	19.34	1.96	127	23.00
Bareilly	0.48	12.33	27.15	28.99	1.13	146	9.05
Kheri	0.71	7.61	16.29	9.60	1.23	117	6.30

contd....

1.	2.	3.	4.	5.	6.	7.	8.
Faizabad	0.23	12.51	12.48	10.96	7.34	116	7.32
Varanasi	0.36	16.25	10.45	26.88	7.68	96	12.56
Mainpuri	0.26	18.49	5.14	11.80	0.76	121	4.96
Mathura	0.43	12.92	6.39	21.06	2.58	122	7.04
Pilibhit	0.42	9.32	21.12	16.22	1.1	147	8.40
Gonda	0.24	5.45	22.48	7.32	6.23	157	N.A.
Badaun	0.35	7.54	19.12	16.14	1.45	180	N.A.
Bijnor	0.43	14.76	39.45	24.79	2.8	160	16.39
Hamirpur	0.55	11.57	6.06	16.6	14.94	126	8.51
Meerut	0.60	20.30	25.30	31.22	3.07	125	N.A.
Gorakhpur	0.48	10.36	10.77	10.59	10.68	123	5.58
Unnao	0.51	12.34	10.68	11.87	6.85	149	6.34
Ballia	0.50	14.29	5.26	9.09	8.96	68	N.A.
Azamgarh	0.36	12.20	13.97	9.20	17.98	110	N.A.
Agra	0.53	19.92	10.98	38.18	1.66	115	N.A.

1.	2.	3.	4.	5.	6.	7.	8.
Farrukhabad	0.39	19.08	12.64	16.15	1.83	141	8.43
Aligarh	0.39	16.24	13.17	23.00	1.64	129	10.62
Bahraich	0.31	5.29	25.02	7.05	3.33	150	38.69
Sitapur	0.29	8.38	17.64	10.29	1.64	143	N.A.
Hardoi	0.33	9.52	10.84	11.06	1.27	173	16.00
Jaunpur	0.46	10.89	8.34	6.67	9.07	118	N.A.
Deoria	0.35	9.07	22.72	6.63	19.22	120	4.97
Etah	0.21	13.10	10.45	15.49	1.14	170	N.A.
Banda	0.34	8.61	5.51	11.80	20.13	98	6.79
Basti	0.24	7.94	20.40	4.80	12.52	164	N.A.
Ghaziabad	0.00	21.32	21.17	34.1	2.66	114	27.13
Lalitpur	0.00	9.96	2.11	13.33	20.89	138	25.92