

Socio-economic and Demographic Differentials of Contraceptive Usage in Indian States: A Study Based on NFHS Data

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ABSTRACT This study aims to investigate the differentials of contraceptive use in two regions of the Indian sub-continent, namely, Empowered Actions Group (EAG) ¹ states and South Indian states by some socio-economic and demographic variables among the currently married women aged 20-49. To find out the differentials of contraceptive use between the two regions, Multiple Classification Analysis (MCA) was applied to National Family Health Survey (NFHS 3) data using some socio-economic and demographic variables. Of the socio-economic and demographic factors, wealth status of household, number of living children, exposure to media, female autonomy and ethnicity were found to be more important in determining the usage of contraception of the women. Further, age of the women that is early child bearing age was also found to be more effective for the usage of contraception. Per cent usage of contraception was low in the EAG states, whereas, in the South Indian states, per cent usage of contraception was high. The study shows that prevalence of modern contraception was high in South Indian states, on the other hand, prevalence of traditional contraception was high in the EAG states.

INTRODUCTION

Over population is a major problem in the developing countries specifically in India. Kesarwani and Yadav (2012) studied that there is an association between gender preference and contraceptive use among currently married women in Uttar Pradesh (UP) and Bihar. About 83 and 87 percent women respectively in Uttar Pradesh and Bihar having no son desired for more children. Educational levels of women, sex preference, marital duration, infant death and exposure to mass media have significant effect on the use of contraception (Sahoo 2007). In Madhya Pradesh and Chhattisgarh only 42 percent of the tribal women were using family planning methods as compared to 58 percent for non tribal women (Sharma and Rani 2009). In Bihar, Jharkhand, Maharashtra and Tamil Nadu, women who experience physical violence from their husbands are significantly less likely to adopt contraception and more likely to experience unwanted pregnancy (Stephenson et al. 2008). The factors that influence most a woman's use of contraception include her age, number of living sons she has, and her religious affiliation (Chako 2001). Tamil Nadu and Andhra Pradesh are success stories in fertility and family planning,

Uttar Pradesh, by contrast, has by far the highest fertility of any state in India (NFHS Bulletin 1996). In order to stabilize the population size and achieve a net reproductive rate of one, 60% of Indian couples would need to practice birth control measures (Satia and Maru 1986: 144). At present, 34.9% India's reproductive population use some forms of birth control measures (Brown et al. 1987). The use of contraceptive methods by reproductive population is a step towards control of population of the country.

A study by Okezie et al. (2010) found that educated women are more likely to appreciate the advantages of having fewer and better educated children. Saleem and Bobak (2005) studied that contraceptive use was strongly associated with women's education but this relationship was not mediated with women's autonomy. Blunch (2008) studied that both education and religion are important factors affecting contraceptive use of the women. He further studied that adult literacy programmes are fairly successful in promoting contraceptive use. Samandari et al. (2010) studied that women who believed that their husbands had a positive attitude towards contraception were more likely to use a method than others. Among all women and high-parity women, those whose husbands made the

final decision about contraception were less likely than other women to use a method. Yee and Simon (2010) studied that the experience and opinions of social network influence contraceptive decision in population of young minority women. The study by Myo-Myo-Mon and Li-absuetrakul (2009), found an enhanced decision to use contraception significantly due to motivation from a provider, friends and spousal communication. Islam et al. (2009) studied the impact of exposure to mass media on contraceptive use among Garo population in Bangladesh. The study found that television was the most significant form of mass media to disseminate family planning messages leading to contraceptive use among the target population.

Family planning through contraception aims to achieve two main objectives: firstly to have only the desired number of children and secondly to have these children by proper spacing of pregnancies. In India, there has been a considerable increase in the governmental and non-governmental activities for promoting the adoption of family planning through widespread and intensified efforts as well as clinical services being made available to the users of family planning methods (Dabral and Malik 2005). Acceptance of contraception by a couple is governed by various socio-economic and cultural factors, such as religion, education of husband and education of wife (Coale 1965; Berelson 1976). According to Bongraats and Potter (1983) socio-economic factors are the principal causes of fertility trends and differentials.

The influence of education on fertility is transmitted through four main proximate determinants: marriage, postpartum amenorrhea and abstinence, abortion, and use of contraception. However, fertility is mainly determined by the extent of use of contraceptive methods. Keeping in view this fact, India initiated family planning programmes that offer services and information about contraceptive methods to couples who wanted to regulate their family size.

Several studies conducted prior to the 1994 International Conference on Population and Development (ICPD), indicated that best results would be gained by a good family planning programme implemented under good socio-economic set up (Bongrats et al. 1990; Jain 1985; Cutright 1983; Mauldin and Berelson 1978; Freed-

man and Berelson 1976). The population issues of the countries affected the international discourse and at the same time outcome of the international conferences influenced the population policies and programmes of the developing countries.

According to NFHSs, the use of different contraceptive methods has increased significantly in India. Over the thirteen years period, there has been a steady increase in the contraceptive prevalence rate (CPR) from 41 percent in NFHS 1 (1992-93) to 48 percent in NFHS 2 (1998-99) and to 56 percent in NFHS 3 (2005-06). The use of contraception has increased steadily in both urban and rural areas, but the pace of change has been faster in rural areas. Since NFHS 1, the use of each modern and traditional method except male sterilization and IUD has increased. Between NFHS 1 and NFHS 3, the CPR increased more in rural areas (16 percentage points) than in urban areas (13 percentage points). Current use of IUDs, the rhythm method, and withdrawal generally increase and current use of female sterilization generally decrease with an increase in the educational level of women. Due to the contrasting patterns in the use of sterilization and spacing methods by education, there is no consistent relationship between women's education and the CPR or current use of modern method for women who have received some education (NFHS 3 2005-06).

After reviewing the previous literature on contraceptive differentials in the EAG region, in the South Indian region, at the national level as well as international perspectives, it appears that the factors influence the contraceptive usage are: level of education of the women, sex preference, marital duration, infant death, exposure to mass media, religion, number of living children, husbands' attitude towards contraceptive use, are mostly common to the present study and it has been helpful for the author to design this study.

The present study discusses the nature of themes relating to subjective meaning – differentials in contraceptive use in Indian states. It was also seen highlighting the dynamic issues involved as to how the socio-economic and demographic characteristics influence the differentials in contraceptive use in two regions of the developing country like India.

Objectives

The main objectives of the study are: (1) to estimate the differentials of contraceptive use in two regions of India namely, Empowered Actions Group states (EAG)² and South Indian states; and (2) to explore the impact of socio-economic and demographic predictor variables on likelihood of contraceptive use of the women aged 20-49 years in two regions.

Efforts were also made to study the impact of some socio-economic and demographic characteristics (namely, education level of the women, number of living children, religion, caste, education level of husband, exposure to media, female autonomy, son preference, experience of infant death, place of residence, wealth status of household) on the contraceptive use of the women of these regions.

The states, namely, Andhra Pradesh, Tamil Nadu, Kerala and Karnataka are named as the South Indian states. In these states, fertility, infant death, under 5 mortality are less as compared to the national average.

MATERIALS AND METHODS

Large scale data on current contraceptive use available from National Family Health Survey (NFHS 3 2005-06) by state and national level, is a sample survey conducted by International Institute for Population Sciences, Mumbai, India. In this survey, information was collected on current contraceptive use by the currently married women aged 15-49.

A data file containing information on current contraceptive use by women aged 20-49 years was created extracting information from household as well as individual file of NFHS 3. Thus the created data file focuses on 124385 women having information on current contraceptive use along with different socio-economic and demographic characteristics. The respondents of this study, that is, the currently married women aged 20-49 are divided into three categories: 20-29 – early child bearing age cohort, 30-39 middle child bearing age cohort and finally 40-49 later child bearing age cohort. The analysis of this study is carried on the basis of these three age cohorts. The women aged 15-19 have been excluded from the study on the ground that very few women of this age group are married and among them very few are contraceptive users.

For convenience, the data used here consist of two broad method types, namely, all modern methods and all traditional methods. The modern methods constitute 36.4% of the total methods used, female sterilization being 26.2 % followed by condom 4.8%. On the other hand, periodic abstinence (3.4%) and withdrawal (2.3%) (NFHS 3) are the two major components of traditional methods. Thus three major groups: modern method, traditional method and using no method are used in the analysis to estimate the likelihood of current contraceptive use of the currently married women aged 20-49 years and also to find out the differentials of contraceptive use between two regions namely, Empowered Actions Group states and South Indian states of the country.

Multiple Classification Analysis (MCA) is applied to study the likelihood of contraceptive use of the currently married women aged 20-49 years and differentials of contraceptive use in the two regions of the country by some socio-economic and demographic characteristics.

The multinomial logit model (also called the polytomous logit) is a generalization of the binary logit model. In this context, “binary” means that the response variable has two categories, and “multinomial” means that the response variable has three or more categories. In multinomial logit regression, the predictor variables may be quantitative, categorical, or a mixture of the two. The explication of the multinomial logit model is facilitated as follows:

- P₁: estimated probability of using modern method
- P₂: estimated probability of using traditional method
- P₃: estimated probability of using no method

The categories of the response variable are mutually exclusive and exhaustive: A sample member must fall in one and only one of the categories. Suppose that the reference category is ‘no method’, and the choice of the reference category is arbitrary, insofar as this choice has no effect on the final estimated probabilities of using each method.

Suppose also that the predictor variables are education (low, medium, or high) and place of residence (urban or rural):

- M: 1 if medium education, 0 otherwise
- H: 1 if high education, 0 otherwise
- U: 1 if urban, 0 otherwise

The researcher's theory is that education and place of residence influence contraceptive choice. The multinomial logit model then consist of two equations plus a constant:

$$\log = \frac{P_1}{P_2} \quad a_1 + b_1 M + c_1 H + d_1 U \quad \dots\dots\dots(1)$$

$$\log = \frac{P_2}{P_3} \quad a_2 + b_2 M + c_2 H + d_2 U \quad \dots\dots\dots(2)$$

$$P_1 + P_2 + P_3 = 1 \quad \dots\dots\dots(3)$$

Strictly speaking, the quantities P_1/P_3 in 1 and P_2/P_3 in 2 are not odds, because numerator and denominator do not necessarily sum to one. The model in 1 can be fitted by the method of maximum likelihood. We can choose the values of $a_1, b_1, c_1, d_1, a_2, b_2, c_2$ and d_2 to maximize the likelihood function. It is assumed that the model has been fitted and proceed to examine how to use and interpret it.

As in the binary logit regression, the most convenient way to present the effects of the predictor variables on P_1, P_2 and P_3 is in the form of Multiple Classification Analysis table, which is constructed in the following way: The first step is to take each side (1) and (2) as a power of e and then multiply through by P_3 , yielding

$$P_1 = P_3 e^{a_1 + b_1 M + c_1 H + d_1 U} \quad \dots\dots\dots(4)$$

$$P_2 = P_3 e^{a_2 + b_2 M + c_2 H + d_2 U} \quad \dots\dots\dots(5)$$

$$\text{We also have the identity} \\ P_3 = P_3 \quad \dots\dots\dots(6)$$

If we now add (4), (5) and (6) and recall that $P_1 + P_2 + P_3 = 1$, we get

$$1 = P_3 \sum_{j=1}^2 e^{a_j + b_j M + c_j H + d_j U} + P_3 \quad \dots\dots\dots(7)$$

Solving (7) for P_3 we get

$$P_3 = \frac{1}{1 + \sum e^{a_j + b_j M + c_j H + d_j U}} \quad \dots\dots\dots(8)$$

Substituting (8) back into (4), (5) and (6) and repeating (8), we obtain

$$P_1 = \frac{e^{a_1 + b_1 M + c_1 H + d_1 U}}{1 + \sum e^{a_j + b_j M + c_j H + d_j U}} \quad \dots\dots\dots(9)$$

$$P_2 = \frac{e^{a_2 + b_2 M + c_2 H + d_2 U}}{1 + \sum e^{a_j + b_j M + c_j H + d_j U}} \quad \dots\dots\dots(10)$$

$$P_3 = \frac{1}{1 + \sum e^{a_j + b_j M + c_j H + d_j U}} \quad \dots\dots\dots(11)$$

Equations (9), (10) and (11) are the alternative statement of the model in equations in (1), (2) and (3) are the calculation formulae for P_1, P_2 and P_3 that is probability of using modern method, traditional method and probability of using no method (Ratherford and Choe 1993).

FINDINGS

Table 1 presents the distribution of number of living children of the currently married women by selected characteristics in the EAG states as well as South Indian states. Data in Table 1 shows that the number of 3 and more living children is high for underdeveloped segment of the Indian society, for example, Muslim, SCs, STs, OBCs, poorest and poorer women etc., which in turn, indicates high TFR among these groups of people.

List of Variables Used and Definitions

Number of living children: It is a continuous variable and the number of living children is considered 1, 2 and ≤ 3 .

Education level of respondent $\leq$ primary: is the reference category.

Education level of respondent - secondary: if education level of respondent is secondary, 1 is assigned; 0, otherwise.

Education level of respondent - higher: if education level of respondent is higher, 1 is assigned; 0, otherwise.

Religion -Hindu: is the reference category.

Religion - Muslim: if the respondent is Muslim, 1 is assigned; 0, otherwise.

Other religion (Sikh, Jain, Buddhist, Christian etc.): if the respondent belong to other religion category, 1 is assigned; 0, otherwise.

General Caste (Socio-economically developed caste in the Indian society): is the reference category.

Scheduled Caste: if the respondent belong to Scheduled Caste category, 1 is assigned; 0, otherwise.

Scheduled Tribe: if the respondent belong to Scheduled Tribe category, 1 is assigned; 0, otherwise.

Table 1: Distribution of number of living children by socio-economic and demographic characteristics

Characteristics	Categories	EAG states			South Indian States		
		Number of living children			Number of living children		
		1	2	≥3	1	2	≥3
Education Level of Respondent							
	≤Primary	2622	3704	13256	1096	2814	3966
	Secondary	1555	2355	2736	1562	3224	1776
	Higher	659	1010	329	585	659	99
Religion	Hindu	4194	6180	13630	2626	5518	4351
	Muslim	507	594	2332	384	663	1198
	Other religion	104	265	265	229	498	286
Caste	General	1519	2594	3713	813	1546	1148
	SC	825	1036	3339	505	1050	1197
	ST	510	650	1777	102	208	293
	OBC	1970	2781	7457	1708	3634	3002
Wealth Status	Poorest and poorer	1923	2354	7999	559	1241	1446
	Middle and richer	1564	2289	5686	1530	3351	3149
	Richest	1349	2429	2636	1154	2106	1246
Media Exposure	No media exposure	2010	2611	10013	414	869	1308
	Level =2	2685	3345	10100	1422	3117	3439
	Level=4	1176	1661	2588	1268	2831	1906
	Level=6	470	884	674	905	1569	578
Education Level of Husband							
	≤Primary	1613	2245	8286	926	2338	3108
	Secondary	2191	3112	6490	1600	3389	2351
	Higher	981	1639	1364	687	932	329
Occupation	Not working	4106	5093	11459	2386	4332	3169
	Working	2243	3423	11940	1628	4069	4081
Infant Death	Infant death-no	5641	7664	20962	3495	7225	6356
	Infant death-yes	708	852	2438	519	1177	894
Autonomy	Nil	1962	1751	3603	689	1217	1221
	Half	2108	2923	8383	1152	2664	2175
	Full	1633	3210	10134	1624	3833	3186
Son Preference	No son preference	4520	6200	13110	3713	7685	6090
	Having son preference	1829	2316	10287	300	716	1157
Residence	Rural	4813	6118	18664	2280	5135	4846
	Urban	1536	2398	4735	1734	3266	2404

Other Backward Classes: if the respondent belong to Other Backward Classes category, 1 is assigned; 0, otherwise.

Poorest and poorer: is the reference category.

Middle and richer: if the respondent belong to middle and richer wealth status category, 1 is assigned; 0, otherwise.

Richest: if the respondent belong to richest wealth status category, 1 is assigned; 0, otherwise.

Media exposure is a continuous variable and it is defined elaborately in the findings section.

Education level of husband ≤ primary: is the reference category.

Education level of husband - secondary: if education level of husband is secondary, 1 is assigned; 0, otherwise.

Education level of husband - higher: if education level of husband is higher, 1 is assigned; 0, otherwise.

Working status of the respondent: not working is the reference category.

Working status of respondent - Working: if the respondent is working, 1 is assigned; 0, otherwise.

Infant death: No experience of infant death is the reference category.

Having experience of infant death: if the respondents having experience of infant death, 1 is assigned; 0, otherwise.

Female autonomy is a continuous variable. Female having no autonomy is the reference category.

Son preference- respondent having no son preference is the reference category.

Respondent having son preference, 1 is assigned; 0, otherwise.

Use of contraception by women aged 20-29, 30-39 and 40-49 years in EAG and South Indian states by different socio-economic and demographic characteristics is presented in Tables 3-5 and Figures 1-6. Table 3 presents the socio-economic and demographic characteristics by sample frequency and proportion calculated by Multiple Classification Analysis (MCA) along with chi2 test. Same exercise has also been followed for Tables 4 and 5, but only the summary results by MCA and Chi-square test is presented.

Number of Living Children: The impact of the number of living children on contraceptive use of the currently married women gives positive relationship for the modern method excepting for the women belonging to age group 40-49 of EAG region. In this region, for the age group 20-29 and 30-39, there is a positive trend of using both types of contraceptive methods with the increasing number living children. In the age group 40-49 of EAG region, per cent of using modern method decreases after first living child and per cent of using traditional method increases with the increase in number of living children. The age cohort 40-49 is the last stage of the child bearing ages of the women and most of the births occur before this age group, moreover, the couples may prefer to use some traditional methods for spacing of birth. In South Indian region, per cent usage of modern method increases and per cent usage of traditional method decreases with the increase in number of living children.

Education Level of Women: The age group 20-29 is the main child bearing age of the women, and there is positive trend in the use of contraceptive method with the increase in educational attainment of the respondents. In the other age groups, more specifically 30-39 and 40-49, impact of education on the use of modern method is not clear. Actually there is little difference at different levels of education on the use of modern contraceptive method. In some cases, use of modern contraceptive method is less at higher level of education as compared to low level of education of the respondents. In reality, there is slight increase in the use of traditional method for higher level of education of the respondents. The data (NFHS 3) show that cur-

rent use of condoms, the rhythm method, and the withdrawal generally increases and the undergoing of female sterilization generally decreases with an increase in the educational level of women.

Religion: Ethnicity has significant impact on the reproductive behavior of the women. The 'particularized theology' argues that it is the very essence of religion that influences fertility, irrespective of any socio-economic and demographic factors. In the present study, it was observed that in both category of states and age groups, Muslim women are less likely to use any contraceptive method than the other religion groups (Hindu, Christian, Sikh, Jain etc.).

Caste: Contraceptive prevalence rate is the highest among the women who do not belong to Scheduled Castes, Scheduled Tribes or Other Backward Classes. At the national level, contraceptive prevalence rate by different caste categories follow the pattern consistent with the comparative advancement in the Indian society. The SCs are generally the advanced group than the STs, but in regard to contraceptive use, the performance of STs are better than the SCs in the EAG states. On the other hand, in the South Indian states, in the age groups 20-29 and 30-39, contraceptive prevalence is higher among the SCs than STs. But in the later age group that is 40-49, contraceptive prevalence is higher among the STs than the SCs. The contraceptive prevalence among Other Backward Classes women is higher than the SCs and STs in all cases.

Wealth Status: Use of modern contraception according to wealth status of household follows the general pattern, that is, it is high for high wealth quintile and low for low wealth quintile in all the age groups and category of states. However, in the EAG states, use of traditional method is high at the low wealth quintile as compared to high wealth quintile.

Exposure to Media: In NFHS 3, respondents' media exposure was measured by asking women and men about the frequency (almost every day; at least once a week; less than once a week or not at all) with which they read a news paper or magazine, watch a television, or listen to the radio. Women who do not read a news paper or magazine, watch television, or listen to the radio at least once a week are considered not to be exposed to any media. In this study, media expo-

sure is a continuous variable, and calculated giving maximum weight to reading news paper followed by watching television and listening to the radio. Weights are given as in Table 2.

Table 2: Weights for media messages of family planning

Media	Almost everyday	At least once a week	Less than once a week
Reading news paper	3	1.5	0.75
Watching television	2	1	0.5
Listening to the radio	1	0.5	0.25

For the purpose of Multiple Classification Analysis, only 3 levels of media exposures are considered. Thus, media exposure level 6 representing higher level, 4 representing medium level and 2 representing lower level exposure of these three media, namely, reading a news paper or magazine, watching television and listening to the radio.

There is a positive association between the level of media exposure and use of modern contraceptive methods in both the regions and all age cohorts. The prevalence of modern contraceptive methods increases with the increase in the level of media exposure. But prevalence of traditional methods does not follow the increasing trend with the increase in level of media exposure. The per cent use of modern method is higher in South Indian states whereas the per cent use of traditional method is higher in EAG states.

Education Level of Husband: Higher level of education of husband is supposed to be associated positively with the use of contraception. This perception is true for EAG states for the women aged 20-29. In other age groups that is 30-39 and 40-49 of the EAG states, use of modern contraception is negatively associated with the higher level of education of husband, whereas the use of traditional method is positively associated. In the South Indian states, husbands' education has no impact on the usage of contraception, and it does mean that women belonging to any household irrespective of husbands' education are aware about the family planning methods and reproductive behavior.

Work Status of Women: Females' earning is negatively associated with fertility (Becker 1981;

Schultz 1985). Consequently, the working women are more likely to use contraception than non-working women. This is because of the fact that the working women are more likely to be educated, and their socio-economic well-being is supposed to be better than the non-working women. Furthermore, the working women are likely to be more knowledgeable about the reproductive behavior and source of the family planning methods than their counter parts. In each of the categories of states and age cohorts, the use of modern contraception is higher for the working women than the non-working women, but in the EAG states, the use of traditional method is higher for the non-working women than the working women.

Experience of Infant Death: It is generally agreed that women having experience of infant deaths are less likely to use contraceptive methods than women having no experience of infant deaths. Use of contraception is expected to be negatively related with higher number of infant deaths experienced. But our data show the opposite results excepting for the women aged 40-49 of EAG states. This may be due to small sample size and fragmentation of data by region and age.

Female Autonomy: Female autonomy refers to female's increased control over decision making, economic self-reliance, legal rights to equal treatment, and protection against all forms of discrimination.

In this study, the variable 'female autonomy' is generated giving weight to different factors associated with the women and their households, and whether these factors are accessible to the women, namely, final say on (1) own health care, (2) large household purchases, (3) making household purchases for daily needs, (4) visits to family or relatives, and (5) how to spend money earned by the husband. For example, for the factor – final say on health care, weight 2 is given when it is decided by women alone and weight 1 is given when it is decided by respondent and husband/partner.

Contraceptive use by women is positively associated with the higher level of autonomy except the women aged 40-49 in the South Indian states.

Son Preference: The present study shows that couples having son preference are less likely to use contraceptive methods than the couples having no son preference. Even among this

Table 3: Contraceptive use by number of women and methods and by selected characteristics- for the women aged 20-29 years

Variables	EAG states			South Indian states		
	Modern	Traditional	Not using	Modern	Traditional	Not using
No. of living children=1	586 (21.6)	228 (6.0)	2185 (72.4)	368 (26.0)	94 (2.3)	1261 (71.8)
No. of living children=2	1291 (34.0)	263 (7.5)	1848 (58.6)	1809 (72.3)	41 (1.9)	537 (25.8)
No. of living children $\geq$ 3	1651(83.0)	264(7.1)	1869 (10.0)	866 (100.0)	5(0.0)	185 (0.0)
	Pearson chi2 (6) =2500 P=0.000***			Pearson chi2 (6) =4200 P=0.000***		
Respondents' education $\leq$ Primary (R)	1884(30.5)	419(6.3)	5357(63.2)	1400(39.3)	16(1.5)	1181(59.3)
Secondary	1313(33.8)	281(8.6)	2895(57.6)	1444(40.7)	98(2.7)	2354(56.6)
Higher	399(33.7)	83(11.0)	1313(55.3)	226(40.9)	39(5.5)	1103(53.6)
	Pearson chi2 (4) =59.1 P=0.000***			Pearson chi2 (4) =554.7 P=0.000***		
Hindu (R)	3149(34.0)	676(7.4)	7918(58.7)	2548(43.1)	86(2.1)	3536(54.9)
Muslim	376(19.6)	88(5.9)	1370(74.5)	376(22.0)	40(4.2)	807(73.8)
Other religion	71(28.5)	18(8.4)	206(63.2)	140(43.1)	27(5.3)	287(51.6)
	Pearson chi2 (4) =39.8 P=0.000***			Pearson chi2 (4) =109.8 P=0.000***		
General caste (R)	1066(33.7)	212(7.4)	2711(59.0)	587(48.4)	48(3.0)	1071(48.6)
SC	597(26.4)	152(8.2)	1745(65.5)	590(34.6)	19(2.8)	846(62.7)
ST	304(33.3)	49(4.7)	1087(62.0)	156(33.9)	3(3.4)	150(62.7)
OBC	1623(32.6)	367(7.4)	4011(60.0)	1646(40.0)	59(2.0)	2420(58.0)
	Pearson chi2 (6) =51.1 P=0.000***			Pearson chi2 (6) =47.8 P=0.000***		
Poorest and poorer (R)	1153(26.1)	295(7.3)	4159(66.6)	724(33.4)	7(1.0)	761(65.6)
Middle and richer	1361(35.1)	289(7.0)	3232(57.9)	1666(40.4)	73(2.7)	2389(57.0)
Richest	1083(43.8)	199(6.9)	2176(49.3)	680(47.3)	73(4.6)	1488(48.1)
	Pearson chi2 (4) =156.5 P=0.000***			Pearson chi2 (4) =154.6 P=0.000***		
No media exposure(R)	700(25.5)	162(7.7)	2709(66.8)	380(35.4)	8(1.8)	341(62.8)
Media exposure level=2	1415(34.4)	364(7.0)	3549(58.6)	1217(39.1)	27(2.2)	1316(58.7)
Media exposure level=4	1007(44.4)	182(6.2)	2073(49.4)	1062(42.9)	59(2.7)	1692(54.4)
Media Exposure level=6	471(55.0)	74(5.2)	1221(39.9)	406(46.6)	59(3.3)	1281(50.1)
	Pearson chi2 (6) =157.9 P=0.000***			Pearson chi2 (6) =329.0 P=0.000***		
Husbands' education $\leq$ Primary (R)	1063(28.5)	224(6.0)	3158(65.5)	1143(41.5)	14(1.7)	880(56.8)
Husband education secondary	1792(34.0)	400(8.1)	3415(57.9)	1522(38.8)	108(3.2)	1610(58.0)
Husbands' education higher	707(34.5)	153(8.8)	864(56.8)	375(42.5)	30(2.0)	433(55.5)
	Pearson chi2 (4) =257.5 P=0.000***			Pearson chi2 (4) =79.8 P=0.000***		
Not working (R)	2278(29.4)	546(7.8)	5837(62.8)	1781(34.5)	126(2.9)	2842(62.6)
Working	1319(35.7)	237(6.3)	3730(58.0)	1289(48.2)	27(1.8)	1796(50.0)
	Pearson chi2 (2) =26.5 P=0.000***			Pearson chi2 (2) =39.6 P=0.000***		
No experience of infant deaths(R)	3203(32.3)	704(7.3)	8567(60.4)	2678(40.2)	136(2.6)	4053(57.2)
Infant death experienced	394(26.8)	79(6.4)	1000(66.8)	392(40.6)	17(1.4)	585(58.1)
	Pearson chi2 (2) =0.9 P=0.641			Pearson chi2 (2) =0.4 P=0.830		
Female autonomy- nil (R)	707(21.1)	179(6.7)	2108(72.2)	555(38.5)	21(1.4)	573(60.1)
Female autonomy- half	1441(33.6)	312(7.3)	2562(59.1)	1043(40.3)	62(2.4)	987(57.4)
Female autonomy- full	1313(48.7)	260(7.2)	2243(44.1)	1311(41.7)	60(4.1)	1038(54.2)
	Pearson chi2 (4) =124.0 P=0.000***			Pearson chi2 (4) =20.0 P=0.001***		
No son preference (R)	2608(31.9)	584(7.7)	7073(60.5)	2772(41.4)	143(2.5)	4332(56.1)
Having son preference	988(31.3)	199(6.3)	2493(62.4)	295(27.1)	9(1.6)	306(71.4)
	Pearson chi2 (2) =3.1 P=0.073			Pearson chi2 (2) =24.3 P=0.000*		
Rural (R)	1943(30.2)	449(6.7)	6005(63.1)	1589(38.8)	90(3.3)	2151(57.9)
Urban	1654(36.5)	334(9.0)	3562(54.5)	1481(42.4)	63(1.5)	2487(56.1)
	Pearson chi2 (2) =86.4 P=0.000***			Pearson chi2 (2) =27.8 P=0.000***		

Figures in parenthesis represent proportion by Multiple Classification Analysis (MCA)

*** significant at 1 per cent level, ** significant at 5 per cent level and * significant at 10 per cent level

Table 4: Proportion of contraceptive use by methods and by selected characteristics for the women aged 30-39 -Multiple Classification Analysis

Variables	EAG states			South Indian states		
	Modern	Traditional	Not using	Modern	Traditional	Not using
No. of living children=1 (R)	48.60	2.11	49.29	65.77	0.39	33.83
No. of living children=2	51.91	2.57	45.52	84.45	0.25	15.30
No. of living children $\geq$ 3	63.50	5.38	31.13	99.70	0.02	0.28
Respondents' education	Pearson chi(6)=1100.0, P=0.000***			Pearson chi(6)=2200.0, P=0.000***		
≤Primary R	57.11	3.21	39.68	88.80	0.13	11.07
Secondary	59.45	4.49	36.05	87.77	0.36	11.87
Higher	41.56	4.37	54.07	84.92	0.54	14.55
	Pearson chi(4)=267.1, P=0.000***			Pearson chi(4)=198.3, P=0.000***		
Hindu(R)	60.08	3.53	36.40	89.22	0.19	10.59
Muslim	33.78	2.80	63.42	75.89	0.32	23.78
Other religion	62.54	2.36	35.09	89.01	0.46	10.53
	Pearson chi(4)=156.6, P=0.000***			Pearson chi(4)=101.1, P=0.000***		
General caste (R)	59.45	3.27	37.28	90.23	0.82	8.94
SC	49.94	4.00	46.06	85.64	0.86	13.50
ST	55.72	2.52	41.76	83.49	0.00	16.51
OBC	58.25	3.59	38.16	87.63	0.57	11.80
	Pearson chi(6)=127.1, P=0.000***			Pearson chi(6)=39.6, P=0.000***		
Poorest and poorer (R)	52.15	3.81	44.03	85.68	0.11	14.20
Middle and richer	60.58	3.15	36.26	88.60	0.24	11.16
Richest	64.55	2.90	32.55	89.44	0.33	10.24
	Pearson chi(4)=448.3, P=0.000***			Pearson chi(4)=82.5, P=0.000***		
No media exposure (R)	48.34	3.27	48.38	86.95	0.19	12.86
Media exposure level-2	62.43	3.54	34.03	87.94	0.21	11.85
Media exposure level-4	74.39	3.53	22.08	88.86	0.23	10.91
Media exposure level-6	83.24	3.30	13.46	89.72	0.25	10.03
	Pearson chi(6)=559.9, P=0.000***			Pearson chi(6)=116.6, P=0.000***		
Husbands' education	56.49	2.81	40.71	88.04	0.13	11.84
≤Primary (R)						
Secondary	57.10	4.22	38.68	88.32	0.35	11.34
Higher	56.58	4.46	38.96	87.88	0.29	11.82
	Pearson chi(4)=277.9, P=0.000***			Pearson chi(4)=125.5, P=0.000***		
Not working(R)	52.81	4.00	43.19	87.34	0.24	12.41
Working	60.50	3.00	36.50	88.78	0.19	11.03
	Pearson chi(2)=29.7, P=0.000***			Pearson chi(2)=14.5, P=0.001***		
Infant death experience-No (R)	56.58	3.34	40.08	88.23	0.21	11.56
Infant death experience-yes	58.34	4.75	36.92	87.73	0.23	12.04
	Pearson chi(4)=23.9, P=0.000***			Pearson chi(2)=4.2, P=0.123		
Autonomy- nil (R)	50.87	9.68	39.45	78.96	0.34	20.70
Autonomy- half	56.18	3.96	39.86	86.90	0.23	12.87
Autonomy- full	59.70	1.56	38.74	92.13	0.15	7.71
	Pearson chi(2)=7.6, P=0.023			Pearson chi(4)=5.4, P=0.252		
No son preference (R)	55.93	3.53	40.54	88.49	0.21	11.31
Having son preference	58.19	3.35	38.46	85.17	0.24	14.59
	Pearson chi(2)=7.6, P=0.023			Pearson chi(2)=0.8, P=0.666		
Rural (R)	54.87	3.48	41.65	88.98	0.29	10.73
Urban	62.39	3.37	34.24	86.76	0.13	13.11
	Pearson chi(2)=243.6, P=0.000***			Pearson chi(2)=15.6, P=0.000***		

Table 5: Proportion of contraceptive use by methods and by selected characteristics for the women aged 40-49 -Multiple Classification Analysis

Variables	EAG states			South Indian states		
	Modern	Traditional	Not using	Modern	Traditional	Not using
No. of living children=1 (R)	58.29	0.97	40.74	79.46	2.34	18.20
No. of living children=2	57.76	1.19	41.04	85.83	1.64	12.53
No. of living children $\geq$ 3	55.34	2.69	41.97	97.32	0.33	2.35
Respondents' education $\geq$ Primary (R)	57.88	1.66	40.46	88.77	1.02	10.21
Secondary	51.88	2.42	45.70	89.60	1.93	8.46
Higher	41.51	4.99	53.50	89.79	1.87	8.34
Hindu(R)	59.90	1.80	38.30	90.27	1.11	8.62
Muslim	27.53	1.55	70.92	75.40	2.98	21.62
Other religion	67.14	2.11	30.75	88.34	1.81	9.84
General caste (R)	58.89	1.77	39.34	90.77	1.59	7.64
SC	53.02	2.11	44.87	88.56	0.64	10.80
ST	56.15	0.89	42.95	92.82	1.38	5.80
OBC	56.74	2.03	41.23	88.14	1.41	10.45
Poorest and poorer (R)	51.58	2.12	46.31	87.10	1.18	11.72
Middle and richer	60.54	1.59	37.87	89.64	1.06	9.30
Richest	62.81	1.47	35.71	89.53	1.88	8.58
No media exposure (R)	50.47	1.76	47.77	88.79	0.63	10.59
Media exposure level-2	61.61	1.84	36.55	89.13	1.12	9.75
Media exposure level-4	71.56	1.84	26.60	89.06	2.01	8.93
Media exposure level-6	79.67	1.76	18.56	88.32	3.56	8.13
Husbands' education $\leq$ Primary (R)	57.53	1.69	40.78	89.85	0.72	9.43
Secondary	56.18	1.80	42.03	88.93	2.14	8.94
Higher	53.06	2.71	44.24	83.41	3.18	13.42
Not working(R)	54.83	1.96	43.21	89.51	1.05	9.44
Working	58.21	1.69	40.10	88.81	1.50	9.69
Infant death experience-No (R)	57.33	1.80	40.88	89.60	1.31	9.09
Infant death experience-yes	50.22	1.97	47.81	85.24	1.03	13.73
Autonomy- nil (R)	46.79	5.94	47.27	72.39	0.53	27.08
Autonomy- half	55.11	2.22	42.67	87.03	1.09	11.87
Autonomy- full	62.25	0.79	36.96	93.35	2.00	4.65
No son preference (R)	55.64	1.91	42.46	88.98	1.25	9.77
Having son preference	58.01	1.68	40.30	90.24	1.45	8.32
Rural (R)	55.84	1.86	42.30	89.43	1.67	8.90
Urban	58.93	1.68	39.39	88.48	0.84	10.68

group of women (having son preference) there has been prevalence, as this study shows, of use of contraception at a lower level, the age cohort in the South Indian states being an exception.

Place of Residence: Women residing in urban areas are more likely to use contraceptive methods than women residing in rural areas. The data also show the same trend in the EAG states'

age cohorts. On the other hand, the rural South Indian women belonging to age groups 30-39

and 40-49 are in a better position as regards use than the urban women of the same age group.

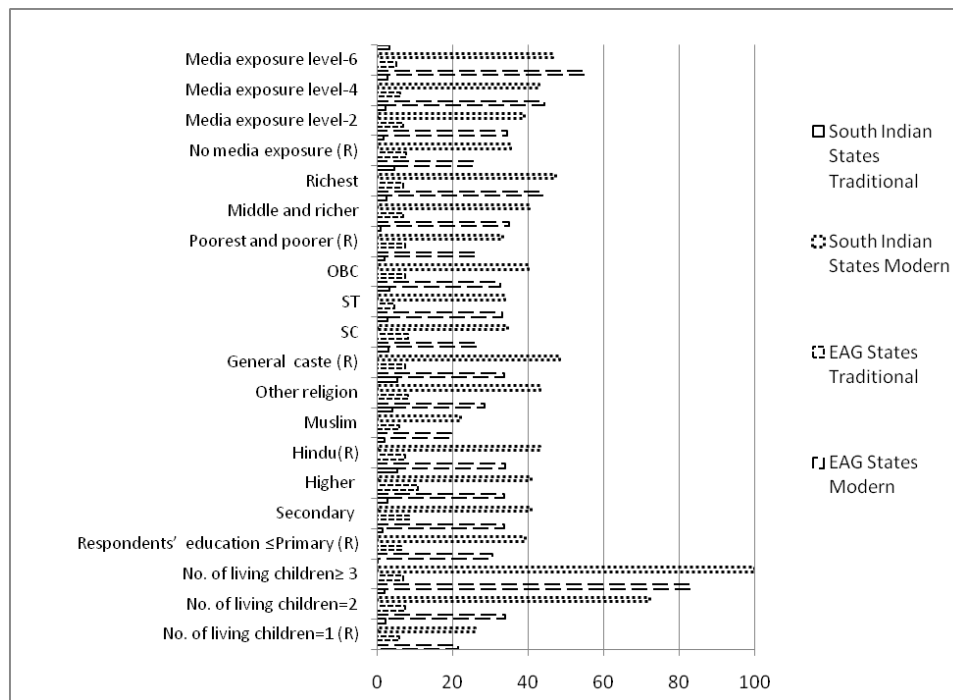


Fig. 1. Proportion of contraceptive use for the women aged 20-29

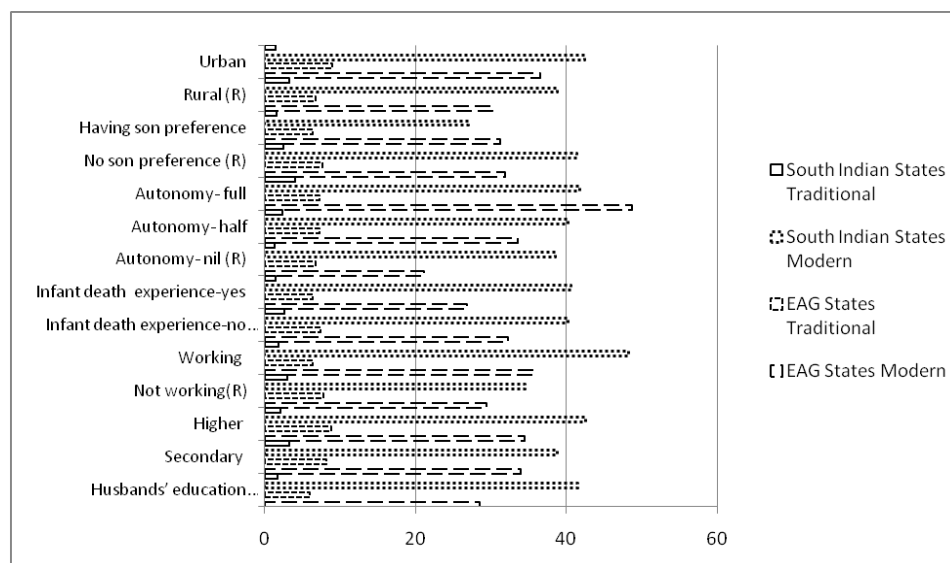


Fig. 2. Proportion of contraceptive use for the women aged 20-29

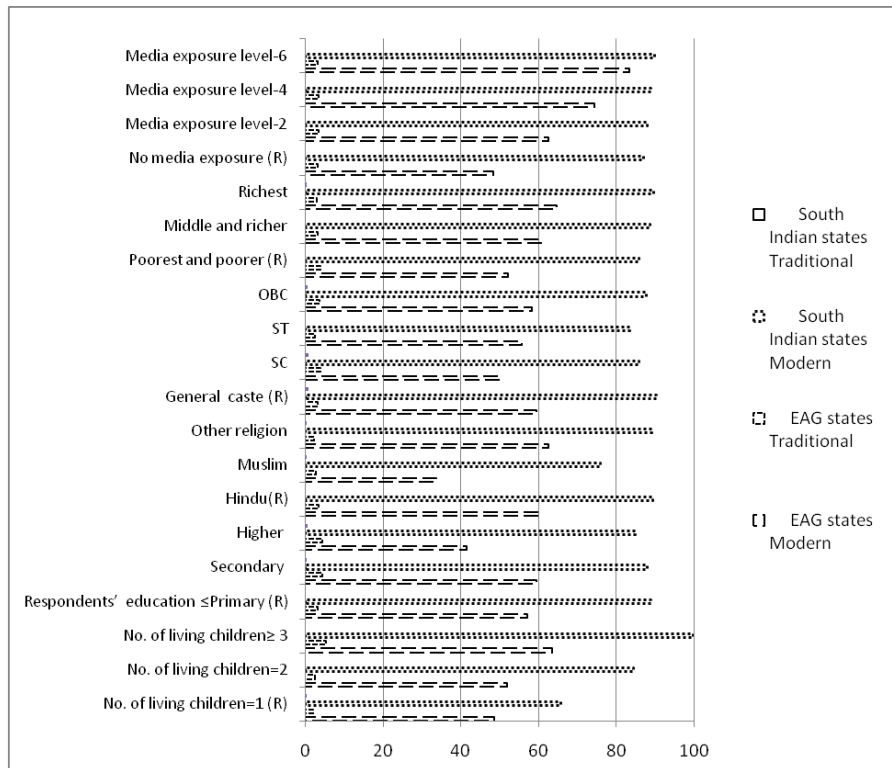


Fig. 3. Proportion of contraceptive use for the women aged 30-39

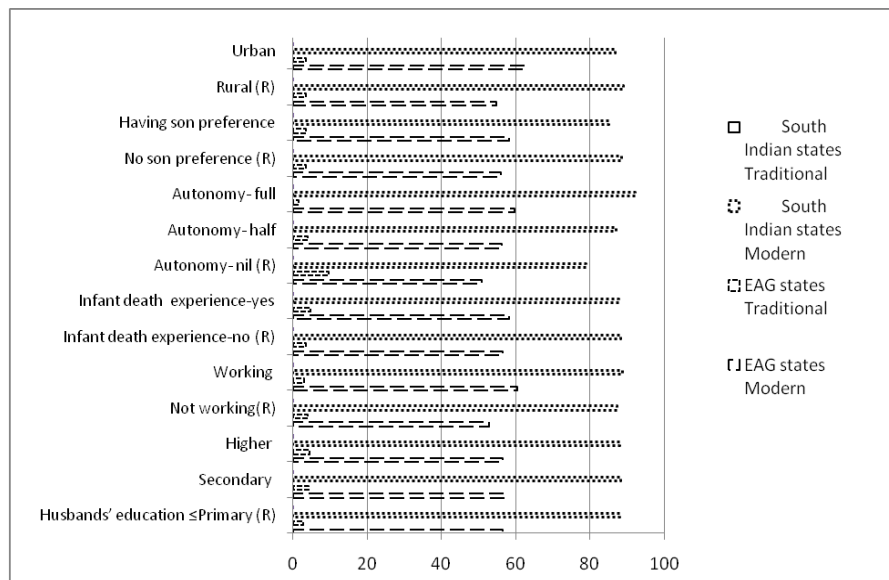


Fig. 4. Proportion of contraceptive use for the women aged 30-39

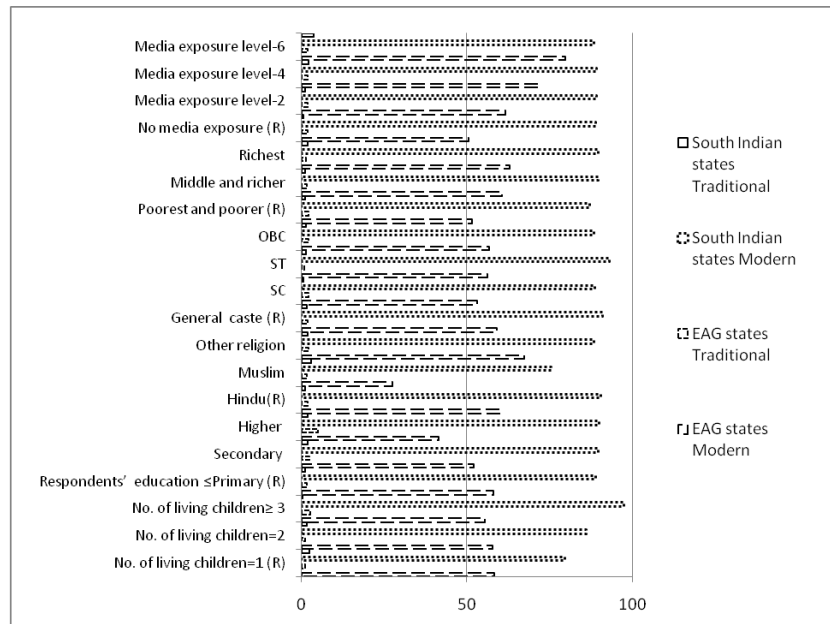


Fig. 5. Proportion of contraceptive use for the women aged 40-49

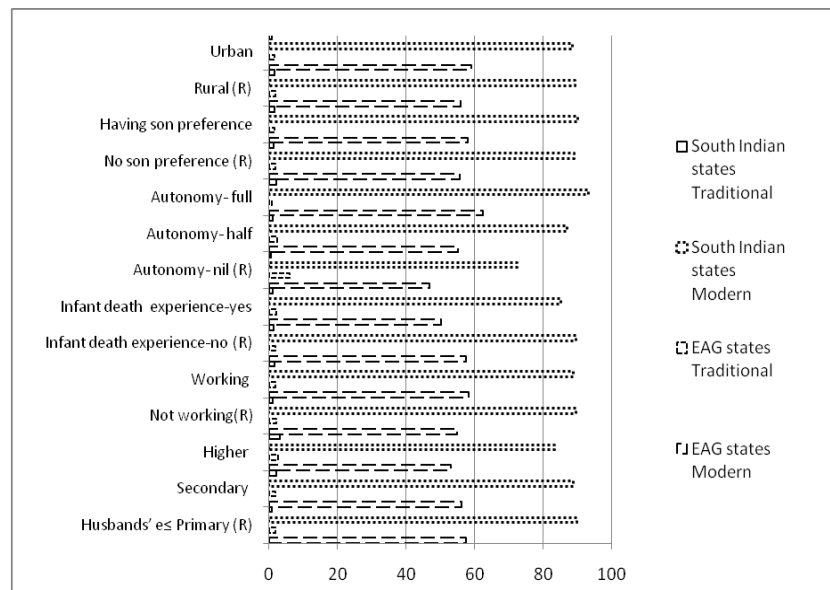


Fig. 6. Proportion of contraceptive use for the women aged 30-39

DISCUSSION

From the foregoing findings, it seems that number of living children play an important role in determining contraceptive use of the women in most of the age cohorts of both the regions (Gandotra and Das 1990; Levine et al. 1992). Prevalence of modern contraception increases with the higher number of living children. Educational status of females is the most important variable accounting for fertility decline (Zachariah 1981; Jolly 1981; Johnson 1993). Kerala had set an example, by having high female literacy leading to higher age at marriage and lower fertility (Zachariah 1981; Caldwell et al. 1984). Education level of women provides significant results only in the age group 20-29 in both the regions and in the age group 40-49 of South Indian states. In this case it is worthwhile to mention that women's age has most significant impact on the use of contraception. The likelihood of usage of contraception of Muslim women is lesser than the women belonging to Hindus and other religion categories. Similarly, probability of fair degree of prevalence of contraception is less for the Scheduled Castes, Scheduled Tribes and Other Backward Classes women than that for the other higher caste women (Gulati 1996; Bora et al. 1998). Usage of contraception increases with higher wealth status (Mahadevan 1989). Exposure to media plays a significant role in promotion and acceptability of contraception (Bhat 1996; Ramesh et al. 1996). Education level of husband bear positive relationship with the contraceptive use only for the women aged 20-29 in the EAG states. In the South Indian states, husbands' education has no impact on the use of contraception by their wives. Working women are in a better position than that of non-working women in regard to usage of contraception. Infant deaths result in more live births as women try to compensate their loss in order to achieve their desired number of surviving children (Dabral and Malik 2005). But in this study, it is found that experience of infant deaths has no impact on prevalence of contraception. Women enjoying autonomy are in a better position for usage of contraception than the women having no autonomy. Couples with son preference and a fewer sons are more likely to continue having more children, besides, having shorter birth intervals and also less probable of using contraceptive methods (Dasgupta 1987; Nag 1991; Raju and

Bhat 1995). In the present study, impact of son preference is not clear on the use of contraceptive methods. It is well founded that the usage of contraception is higher for the urban women than that of the rural women. It is found that the proportion of usage of modern contraception is higher in the South Indian states than the EAG states, whereas, the proportion of usage of traditional methods is higher in the EAG states. Even the proportion of usage of modern contraception of the sub-group population, namely, Muslim, Scheduled Castes, Scheduled Tribes and Other Backward Classes is higher in the South Indian states than the EAG states.

CONCLUSION

This study deals with the perspectives of differentials of contraceptive use between two broad regions, namely, Empowered Actions Group states (EAG) and the South Indian states as well as various sub-groups of populations, namely, Muslims, other religions (Christian, Sikh, Jain, Buddhist etc.), and Scheduled Castes, Scheduled Tribes and Other Backward Classes. It is no surprise that the Muslims, Scheduled Castes, Scheduled Tribes being themselves vulnerable in the society are lagging behind in the matter of contraceptive use and thereby causing high fertility. Women within these sub-groups specifically in the EAG states, due to their poverty and illiteracy lag behind in availing of birth control measures. The factors associated with the poverty, illiteracy and weak decision making power; and early marriage cause high fertility. Sufficient attention to these issues has not been given at the official level.

With regard to these sub-groups of population very little have been done to make them understand the needs and practices of family planning, and also to make them aware about the danger caused by over population of the country, both at the individual and aggregate levels.

RECOMMENDATIONS

To get implemented the family planning programme successfully and to control the population of the country, the sub-sections of population specifically in the Empowered Actions Group states should be uplifted from all sorts of socio-economic backwardness.

Efforts should be made to reduce high infant and child mortality as they are generally responsible for high fertility. In the EAG states, both infant and child mortality are high, and as a result of which fertility is also high as compared to the South Indian states. Age at marriage is one of the determining factors for high fertility. In the EAG states, average age at marriage is lower than the national average which is also caused by low rate of female literacy and poverty thereby causing higher fertility than the national average as well as the South Indian states. Sustained care should be taken to remove poverty and illiteracy from the society for socio-economic upliftment of the country's population.

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NOTES

1. The states, namely, Madhya Pradesh, Uttar Pradesh, Uttaranchal, Jharkhand, Bihar, Rajasthan, Orissa and Chhattisgarh are designated as Empowered Actions Group (EAG) states where fertility, infant death and under 5 mortality are higher than the national average.
2. Empowered Actions Group states (EAG): The National Population Policy (NPP) has listed short and long term goals to be achieved for population stabilisation and achievement of Key Socio-Demographic Indicators by the year 2010 and 2045. One of the key objectives is attainment of TFR (Total fertility rate) of 2.1 or Replacement Level of Fertility by 2010 for the country. It is felt that although progress in some states is satisfactory, poor performance in EAG states is proving to be a constraint to national progress. Therefore, more focused interventions are needed on the issues of reproductive and child health care in these states for attainment of the demographic goal set in the NPP, 2000. It is necessary to provide an impetus for strengthening the primary health care infrastructure, a prerequisite for efficient delivery of family welfare services.
3. Scheduled Castes (SCs), Scheduled Tribes (STs), and Other Backward Classes (OBCs) are the weaker sections or backward communities, whereas the other higher castes are the advanced group of population of the Indian society and also the refer-

ence category. Backwardness of these communities are ranked in ascending order as: Scheduled Tribes < Scheduled Castes < Other Backward Classes. Some special facilities in the matter of education and employment in the government and semi-government departments are provided to these weaker sections of population as described in the Constitution of the country.

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