

# **IMPACT OF AN IRRIGATION PROJECT ON FERTILITY AND CONTRACEPTIVE BEHAVIOUR IN RURAL MAHARASHTRA**

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The present paper is an attempt to study the effects of an irrigation project on fertility and contraceptive behaviour of rural Maharashtra. The data has been collected from two irrigated and two non-irrigated villages in Bhandara district. The complete enumeration of the villages has been done. Anthropological approach was used for collection of extensive information. It is revealed from analysis that irrigation project has change fertility and contraceptive behaviour of the population in irrigated area. Female sterilization is found to be mostly known method followed by condom, pill and male sterilization. The paper concludes with some population policy reflections and emphasizes the potential importance of rural development related irrigation project on fertility and contraceptive behaviour in irrigated area and negative consequences in non-irrigated area. Population Policy aimed to change demographic behaviour should certainly include efforts to co-ordinate development projects with demographic behaviour.

# IMPACT OF AN IRRIGATION PROJECT ON FERTILITY AND CONTRACEPTIVE BEHAVIOUR IN RURAL MAHARASHTRA

## INTRODUCTION

The development of programmes and projects, including infrastructure improvements (roads, electrification, irrigation), education, health, agriculture and industry is key to overall economic development in the countries like India where majority of population live in rural areas. Many countries including India are committed to reducing the birth rate by means of family planning. There is a growing emphasis that economic policies also affect demographic trends and patterns. These effects need to be explored to understand the linkages between socio-economic development and demographic change. Unfortunately, the population and socioeconomic plans have not been fully integrated with various departments for socio-economic development and though many development projects have intrinsic value, they have been undertaken without coordinated plans.

The impact of an irrigation project on the demographic behaviour through agricultural development and socio-economic characteristics of the rural population are of special importance for developing countries like India. It may be stated that in spite of no direct relationship between these two, the fact remains that infrastructure development can help to an increase in agricultural production, which also contributes to overall development. This development invariably leads to the improvements in the quality of life in terms of better standard of living.

It may be recalled that the awareness of the possible linkages between development and population parameters gained momentum after the World Population Conference held in Bucharest in 1974. The conference gave the slogan "development is the best contraceptive". The subject is, therefore, not new. However, developing countries experiences high population growth had then little time to wait for development to curb their rapid population increases. Perhaps, this could be the reason why only a few researchers in India in the past investigated the linkages between population and development. Dhongade, M. P. et. al. (1985) in their baseline survey studied the socio-economic situation in the command area of the irrigation project. They found that intensity of cropping was more in the irrigated area than in the unirrigated area. Mukerji and Kulkarni (1989) conducted an analysis of secondary data and found significant relationship between child deaths and CBR among the demographic variables. The effect of amenities index is more prominent than the irrigation variable. Literacy has emerged in 1981 as a significant variable influencing demographic variables. Mohanty. (1999) concluded that investment in irrigation had helped to improve the socio-economic conditions of households. It had helped to raise productivity, total production, literacy level, standard of living and found to influence demographic behaviour at household and at aggregate level. Patil et. al. (1978) conducted socio-economic survey of Girma irrigation project area in Jalgaon district of Maharashtra. They found that cash crop occupied an important position. Roy (1983) in his study found changing cropping pattern, changing agricultural practices and higher returns per unit of cropped area as a direct effects of irrigation. Prasaratkul et. al. (1985) conducted anthropological study to evaluate the impact of large irrigation project on the surrounding population. They found that irrigation project change ways of life of the population in the irrigated areas. The contribution of irrigation in augmenting the agricultural production is vital and well

recognised. Irrigation projects are among several rural developmental activities in India designed to elevate agricultural performance. They do not have direct demographic objectives. However developmental activity such as an irrigation project may have important impacts on demographic variables as well as social and economic effects. In this paper, an attempt has been made to study the effects of an irrigation project on fertility and contraceptive behaviour.

## **Research Hypotheses**

In this paper, the following hypotheses have been formulated and tested.

1. The perceived cost of children would tend to increase with higher social and economic development; parents would have greater expectations for their children such as higher education and better health. As a result, the value of children as a farm labour in irrigated areas will decline.
2. Due to the increasing cost of children benefits will decrease and it is expected that a higher rate of contraceptive practice in irrigated areas, with the outcome of lower fertility.

## **DATA AND METHODS**

### **The Study Area and Study Design**

For this study, it was essential to select an irrigation project, located in a district, which does not have any other prominent feature that substantially explains the development of that district. The large Itiadh dam and irrigation project in Bhandara district and recently in Gondia district was chosen for which the demographic consequences could be investigated. The population in the districts of the project area has been increasing rapidly during the past two decades. The main reason for selecting Bhandara district was because levels of fertility and mortality are still relatively high and changes would be easier to detect and at the time of selection of irrigation project Gondia district was part of the Bhandara district. The economy of the district mainly depends on agriculture.

It has been recorded that in order to check the damage caused by the high floods of Wainganga river to the villages as well as to utilize its water for irrigation the dam was constructed on the river Gadvi (Tributary of Wainganga). The project consists of the main storage dam in Bhandara (recently Gondia) district. The total length of main dam is 420.60 meters. The maximum height of the dam is 29.85 meters above lowest foundation. The gross storage capacity in the dam is 382.56 mm<sup>3</sup> and the effective storage capacity is 318.85 mm<sup>3</sup>. The dam was completed in the year 1970-71. The total irrigation potential by the project is 18097 hectares in Bhandara and Gondia districts and 12064 hectares in Gadchiroli district. Out of this area, the total irrigable command is 17500 hectares, which is spread over 94 villages in 3 districts. The irrigation in Arjuni (Morgaon) taluka in Gondia district is 5800 hectares, Lakhandur taluka in Bhandara district is 4600 hectares and Aarmori taluka in Gadchiroli district is 7100 hectares.

After identifying all the irrigated and non-irrigated villages under the irrigation project, which comes under the purview of study, a sample of four villages, two irrigated and two non-irrigated have been selected. Two villages in the irrigated

area namely:Pratapgad, and

Dharmapuri have been selected to represent the experimental villages. Both the villages have water for agricultural use year round. The degree of benefits each gains from the irrigation project, however, varies according to the geographic factors, such as the distance from dam site. Common benefits from the irrigation project are flood control in the monsoon season and a supply of water in the dry season. The Itiadoh irrigation project has raised productivity in the regular farming season and enables farmers to have second crop in the dry season, which consequently have increased their income and standard of living. Two villages namely Saigaon and Pendhari have been selected as control areas because they are located outside the irrigation project area and production in both the villages is totally depended on rainfall.

### **Research Methods**

In order to test the hypotheses in the study, it was originally proposed to use both sociological and anthropological approaches. Due to the difficulty of obtaining reliable time series data on the irrigated communities, the complete enumeration of the populations of the selected villages was conducted from 20<sup>th</sup> December 2001 to 28<sup>th</sup> March 2002 and the reference period was 2000. The anthropological approach was applied for the collection of extensive information on population change and development. Four investigators stayed for two and half months in four villages and observed and in depth interviewed villagers.

## **RESULTS**

### **Profiles of Sample Villages**

The basic demographic information such as total population, sex ratios, number of eligible women interviewed, mean children ever born, mean children surviving and crude birth rates are important in regulating and determining demographic behaviour. The demographic profile of sample irrigated and non-irrigated villages is depicted in Table 1.

**Table 1: Demographic Profile of Households from Study Villages (Irrigated and Non-Irrigated), 2000**

Characteristics	Irrigated	Non-Irrigated
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Total number of households covered	320	282
Total population	2998	2609
Sex ratio	989	987
Proportion of population in 0-4 years	10.17	11.33
Proportion of population in 0-14 years	33.51	37.64
Total number of eligible women interviewed	320	282
Total number of eligible women who have given birth	308	279
Mean children ever born	2.74	3.44
Mean child surviving	2.56	3.12
Mean household size	4.96	6.02
Mean female age at marriage	17.7	16.6

The proportion of population in 0-4 years and 0-14 years is higher in case of non-irrigated villages as compared to irrigated villages. For the two sexes combined, the proportion of population in 0-14 ages in 2000 for the two irrigated and two non-irrigated villages were 33.51 percent and 37.64 percent respectively. The women who have given birth is almost universal as more than 96 percent of the eligible women in irrigated villages and 99 percent of the eligible women in non-irrigated villages had given birth in the surveyed villages. The mean number of children ever born (MCEB) is found to be 2.74 and 3.44 while the mean child surviving is 2.56 and 3.12 in irrigated and non-irrigated villages indicating more child loss in non-irrigated villages as compared to the irrigated villages. The mean household size is found to be bigger (6.02) in non-irrigated villages as compared to 4.96 in irrigated villages. The mean female age at marriage 17.7 years is higher in irrigated villages as compared to 16.6 years in non-irrigated villages.

## **Fertility**

### **Pattern of Childbearing in the Selected Villages**

The actual child bearing performance gives idea about the total number of children ever born to the eligible women. The difference in children ever born and child surviving indicates the child loss and reflects the broad demographic scenario of the study population. The distribution of eligible women by the number of living children in the selected irrigated and non-irrigated villages is given in Table 2. From the table it may be observed that in irrigated villages, 29.06 percent of the currently married women have two living children followed by 25 percent who have three living children whereas in non-irrigated villages, 30.85 percent of currently married women have two living children followed by 24.82 percent who had three living children. In irrigated villages, 30 percent of currently married women have four and above living children and in non-irrigated villages more than 31 percent currently married women had four and above living children. It gives a broad idea for the preference of small family in the selected irrigated and non-irrigated villages. It may also be noticed that about 70 percent of women in the

irrigated villages and 69 percent of the women in non-irrigated villages have three or less than three living children.

**Table 2: Distribution of Eligible Women by Number of Living Children in Selected Irrigated and Non-Irrigated Villages, 2000.**

Number of living children	Irrigated Villages		Non-Irrigated Villages	
	Number of women	Percent	Number of women	Percent
0	9	2.81	6	2.13
1	42	13.13	31	10.99
2	93	29.06	87	30.85
3	80	25.00	70	24.82
4	45	14.06	42	14.89
5+	51	15.94	46	16.31
All	320	100	282	100

### **Differentials in Mean Number of Children Surviving and Mean Number of Children Loss in Irrigated and Non-Irrigated Villages by Selected Background Characteristics**

The differentials in MCS and mean number of children loss (MCL) by selected socio-economic variables in irrigated and non-irrigated villages are given in Table 3. It may be observed from table that the MCS and MCL varies with respect to given variables indicates their significance in irrigated and non-irrigated villages. The MCS is found to be 2.56 while MCL is found to be 0.18. This indicates that selected irrigated villages had experienced a proportion of child loss. The MCL varies from 0.20 for women in the age group 15-19 and is found to be 0.67 for women in the age group 40 to 44 indicating the extent of child loss experienced by older cohort of women in the selected irrigated villages. It is also observed that the difference in MCS and MCL declines with the increase in level of mother's education and household income. Similarly, this difference increases with age and marriage duration. The MCS is found to be 3.12 while MCL is found to be 0.32. The MCL varies from 0.20 for women in the age group 15-19 and is found to be 0.88 for women in the age group 40 to 44. It indicates larger proportion of child loss for older cohorts of women.

The MCS and MCL are lowest up to 5 years of marriage duration and highest 16 years and above marriage duration. There is a positive relationship between MCS and MCL in both irrigated and non-irrigated villages. The MCS and MCL decrease with increase in mother's education and husband's education in both irrigated and non-irrigated villages. The higher MCS is observed among nomadic tribe in irrigated villages and among scheduled tribe in non-irrigated villages. The MCS and MCL decline with the increase of mother's education. This indicates importance of mother's education in child survival. The MCS is found to vary with husband's educational level. But, it does not show any consistent variation.

The MCS and MCL with respect to size of land holding has not shown any significant variation. It is minimum for land less labourers, increases for land holding up to

five acres. It declines for land holding of 5.01 to 10 acres and again increases for land holding of more than 10 acres. This might be because mostly all categories of people cultivating land.

### Health care facility use

Pratapgad village is having nursing home in village and Dharmapuri is having health facilities within five kilometers. The road to the nursing home and health facilities can be traveled throughout the year, but it is still underused. This may reflect: (1) the degree of monetary prosperity of the villages (and few illnesses), or (2) the villager's attitudes toward the health facilities. Though the health facilities is available in village or nearby, many villagers in need of medical attention travel much farther to Arjuni Morgaon, Sakoli, Lakhandur and Bhandara to private doctors or to the taluka/district hospital, even though services there are more expensive. The villagers in irrigated villages believe those facilities provides better treatment than the local health facilities. Their bypass of the local health facilities also may indicate that they have enough money to buy what they perceive to be better service. The local health center appears to be used by the villagers only for acquiring contraceptives and simple medication. It is found that proximity to the irrigation area, as well as to an urban area, determine to a large extent the degree of knowledge of health practices, availability of services, and subsequent health standards of the villagers

**Table 3: Mean Number of Children Surviving and Mean Number of Children loss in Irrigated and Non-Irrigated Villages by Selected Characteristics of the Household, 2000.**

Background Characteristics	Mean Number of Children Surviving		Mean Number of Children Loss		N
	Irrigated Villages	Non-Irrigated Villages	Irrigated Villages	Non-Irrigated Villages	
Age					
15-19	0.80	0.80	0.20	0.20	5
20-24	1.20	1.42	0.06	0.09	51
25-29	1.92	2.44	0.13	0.31	55
30-34	2.40	2.95	0.21	0.35	61
35-39	3.12	3.79	0.36	0.38	37
40-44	3.42	3.90	0.67	0.88	42
45-49	4.27	4.98	0.73	0.70	31
All age group	2.56	3.12	0.18	0.32	282
Marriage duration					
Up to 5 years	1.08	1.42	0.14	0.14	61
6-10 years	2.18	2.52	0.32	0.32	40
11-15 years	2.46	3.02	0.21	0.36	45
16 years and above	3.13	3.98	0.81	0.64	136
Mothers education					
Illiterate	2.68	3.38	0.50	0.42	96
Primary school	2.59	3.24	0.49	0.48	89
Middle school	2.54	3.16	0.34	0.36	37
High school	2.18	2.98	0.34	0.18	32
Above high school	2.00	2.22	0.10	0.22	28

Husbands education					
Illiterate	2.86	3.36	0.32	0.36	78
Primary school	2.66	3.12	0.28	0.46	93
Middle school	2.66	3.22	0.22	0.30	51
High school	2.64	3.06	0.18	0.38	36
Above high school	2.35	2.78	0.18	0.24	34
Caste					
Scheduled Caste	2.80	3.03	0.16	0.43	69
Scheduled Tribe	2.92	3.76	0.26	0.66	30
Nomadic Tribe	2.96	3.54	0.16	0.64	21
Other Backward Class	2.27	2.96	0.37	0.42	102
Others	2.42	2.86	0.12	0.47	62
Husbands occupation					
Cultivators	2.42	3.12	0.34	0.42	178
Agricultural Labourer & others	2.96	3.22	0.30	0.34	32
Service	2.34	2.96	0.19	0.28	30
Business	2.50	3.02	0.13	0.46	44
Land holding size					
No land	2.15	2.48	0.40	0.30	61
Up to 2 acres	2.60	3.04	0.16	0.40	138
2.01-5 acres	2.65	2.98	0.18	0.48	68
5.01-10 acres	2.33	3.09	0.32	0.23	15
Above 10 acres	2.58	3.98	0.21	0.14	2

The mean number of children ever born (MCEB) is one of the cohort measure used in fertility analysis. The children ever born to currently married women in reproductive ages may indicate actual child bearing performance of the population.

#### **Mean Number of Children Ever Born in Irrigated and Non-Irrigated Villages by Selected Characteristics of the Household**

The MCEB in irrigated and non-irrigated villages by selected socio-economic characteristics is presented in Table 4. It may be observed from table that MCEB varies with respect to given variables indicates their significance in irrigated and non-irrigated villages. The MCEB for all age groups found to be 2.74 and 3.44 in irrigated and non-irrigated villages respectively. In case of 40 to 44 age group of women the MCEB is found to be 4.09 in irrigated villages as compared to 4.78 in non-irrigated villages. The MCEB by marital duration of 6 to 10 years is found to be 2.5 and 2.84 while for 16 years and above is 3.94 and 4.62 for irrigated and non-irrigated villages respectively. The group of women with 10 or less than 10 years of marital duration would reflect the current preferences and trend of child bearing. The MCEB varies significantly with respect to mother's education indicates its importance. There is inverse relationship between women's education and MCEB. The MCEB declines gradually with increases in level of mother's education. The MCEB for high school and above is 2.10 in irrigated villages as compared to 2.44 in non-irrigated villages whereas the MCEB in case of illiterate is found to be 3.18 in irrigated villages and 3.80 in case of non-irrigated villages. The difference in MCEB declines with the increase of mother's education. This indicates importance of mother's education in MCEB. The MCEB is found to vary with husband's educational level. But, it does not show any consistent variation. The analysis of MCEB with respect to caste in both irrigated and non-irrigated villages showed that scheduled tribe has higher MCEB followed by nomadic tribe, scheduled caste, other



backward caste and others. The husband's occupation showed marginal difference in determining the MCEB in both irrigated and non-irrigated villages. The differential in MCEB with respect to size of land holding has not shown any significant variation in both irrigated and non-irrigated villages. It is minimum for land less labourers increases for land holding up to five acres. It declines for land holding of 5.01 to 10 acres and again increases for land holding of more than 10 acres in both irrigated and non-irrigated villages. This might be because mostly all categories of people cultivating land.

#### **Desired for Additional Children**

After examining the actual child bearing performance and living children, it would be important to know the desire of the respondent on future intention of child bearing. The question was asked to non-sterilized women in both irrigated and non-irrigated villages about the number of additional children they would like to have. The desire for additional children for non-sterilized women in irrigated and non-irrigated villages is depicted in Table 5. From this table, it can be observed that 49 percentage of non-sterilized women in irrigated villages and 45 percentages of non-sterilized women in non-irrigated villages reported not to have any more children. While 42 percentages of non-sterilized women in irrigated villages and 44

**Table 4: Mean Numbers of Children Ever Born in Irrigated and Non-Irrigated Villages by Selected Characteristics of the Household, 2000.**

Background Characteristics	Mean Number of Children Ever Born		N
	Irrigated Villages	Non-Irrigated Villages	
Age			
15-19	1.00	1.00	10
20-24	1.26	1.51	110
25-29	2.05	2.75	122
30-34	2.61	3.30	115
35-39	3.48	4.17	76
40-44	4.09	4.78	78
45-49	5.00	5.68	91
All age group	2.74	3.44	602
Marriage duration			
Up to 5 years	1.22	1.56	129
6-10 years	2.50	2.84	105
11-15 years	2.67	3.38	101
16 years and above	3.94	4.62	267

Mothers education			
Illiterate	3.18	3.80	169
Primary school	3.08	3.72	164
Middle school	2.88	3.52	98
High school	2.52	3.16	93
Above high school	2.10	2.44	78
Husbands education			
Illiterate	3.18	3.72	142
Primary school	2.94	3.58	155
Middle school	2.88	3.52	124
High school	2.82	3.44	105
Above high school	2.53	3.02	86
Caste			
Scheduled Caste	2.96	3.46	145
Scheduled Tribe	3.18	4.42	69
Nomadic Tribe	3.12	4.18	48
Other Backward Class	2.64	3.38	213
Others	2.54	3.33	129
Husbands occupation			
Cultivators	2.76	3.54	358
Agricultural Labourer & Others	3.26	3.56	76
Service	2.53	3.24	72
Business	2.63	3.48	98
Land holding size			
No land	2.55	2.78	86
Up to 2 acres	2.76	3.44	307
2.01-5 acres	2.83	3.46	166
5.01-10 acres	2.65	3.32	40
Above 10 acres	2.79	4.12	5

**Table 5: Desired for Additional Children for Non-Sterilized Women in Irrigated and Non-Irrigated Villages, 2000.**

No. of Additional Children	Irrigated Villages		Non-Irrigated Villages	
	No. of women	Percent	No. of women	Percent
No more	98	48.51	60	44.78
One more	85	42.08	59	44.03
Two and more than two	19	9.41	15	11.94
All	202	100	134	100

percentage of non-sterilized women in non-irrigated villages reported to have only one more child. Nine percentage of non-sterilized women in irrigated villages and 12 percentage of non-sterilized women in non-irrigated villages reported to have two and more than two children. This shows the more preference for small family norm in irrigated villages than in non-irrigated villages.

### Ideal and Actual Number of Children

A question was asked to the eligible women to tell the ideal number of children they would prefer to have. These numbers have been matched with their actual living children to know the extent of planned family in the selected irrigated and non-irrigated villages. The percentage of women with the number of children she perceives to be ideal by the number of living children in selected irrigated and non-irrigated villages is given in Table 6. It is observed from the table that among women with two living children, 65 percent of them have opted for two as an ideal

**Table 6: Percentage Distribution of Eligible Women by Ideal and Number of Living Children in Selected Irrigated and Non-Irrigated Villages, 2000.**

Ideal number of children	Living Children in Irrigated Villages					
	0	1	2	3	4	5+
1	11.11	4.76	4.30	10.00	-	-
2	66.67	76.19	65.59	16.25	8.89	21.57
3	22.22	19.05	26.88	73.75	73.33	47.06
4	-	-	3.23	-	17.78	31.37
Total percent	100	100	100	100	100	100
Total No. of women	9	42	93	80	45	51
Ideal number of children	Living Children in Non-Irrigated Villages					
	0	1	2	3	4	5+
1	16.67	3.22	-	-	-	-
2	50.00	6.45	3.45	11.43	7.14	19.57
3	33.33	64.52	64.37	12.86	69.05	41.30
4	-	25.81	32.18	75.71	23.81	39.13
Total percent	100	100	100	100	100	100
Total No. of women	6	31	87	70	42	46

**Table 7: Mean Ideal Number of Children by Background Characteristics in Selected Sample Population in Irrigated and Non-Irrigated Villages for Two Broad Age Groups of Women, 2000.**

Background Characteristics	Irrigated Villages	Non-Irrigated Villages
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	Age 15-30 (N=15 4)	Age 31-49 (N=16 6)	All age 15-49 (N=32 0)	Age 15-30 (N=14 3)	Age 31-49 (N=13 9)	All age 15-49 (N=18 2)
Education						
Illiterate	2.82	2.77	2.68	3.04	2.98	3.02
Primary school	2.51	2.71	2.54	2.72	2.89	2.74
Middle school	2.43	2.47	2.37	2.55	2.67	2.54
High school	2.28	2.46	2.35	2.48	2.64	2.52
Above high school	2.10	2.18	2.04	2.31	2.42	2.37
Total Income						
Up to 15000	2.54	2.65	2.55	2.79	2.98	2.91
15001-30000	2.51	2.81	2.77	2.76	2.92	2.86
30001-50000	2.29	2.64	2.53	2.65	2.84	2.75
Above 50000	2.25	2.53	2.43	2.56	2.72	2.65
Caste						
Scheduled Caste	2.34	2.78	2.76	2.56	2.96	2.78
Scheduled Tribe	2.55	3.05	2.94	2.76	3.22	2.49
Nomadic Tribe	2.44	2.75	2.84	2.74	2.94	2.86
Other Backward Class	2.43	2.78	2.88	2.62	2.96	2.88
Others	2.30	2.42	2.52	2.52	2.73	2.64
Husbands occupation	2.54	2.74	2.63	2.76	2.95	2.87
Cultivators	2.60	2.88	2.72	2.82	3.08	2.46
Agricultural Labourer & others	2.13	2.54	2.37	2.34	2.72	2.54
Service Business	2.38	2.66	2.52	2.56	2.86	2.72
Land holding size	2.54	2.62	2.56	2.72	2.80	2.78
No land	2.36	2.69	2.48	2.54	2.87	2.72
Up to 2 acres	2.42	2.68	2.56	2.60	2.86	2.75
2.01-5 acres	2.26	2.70	2.52	2.44	2.88	2.68
5.01-10 acres	2.67	2.75	2.72	2.85	2.93	2.89
Above 10 acres						

family size in irrigated villages as compared to only 3.45 percentage of women in non-irrigated villages. In case of women with three living children, 74 percent of them have opted for 3 as an ideal family size as compared to 12.86 percent of women in non-irrigated villages. In case of women with three living children in non-irrigated villages, 69 percent of them had opted for 4 as an ideal family size. On the other hand, among women with three living children, 16.2 percent of women in irrigated villages and 11.4 percent of women in non-irrigated villages had opted for at least two as ideal number of children. Similar differential may be noticed for

others. It indicates that there are large numbers of women who have unwanted children. Therefore there is a need to strengthen family welfare program in order to reduce unwanted childbearing. However, it can be said that though the difference in ideal and actual number of children exists for a larger proportion of women, the difference is minimal in irrigated villages as compared to non-irrigated villages.

### **Ideal Number of Children by Background Characteristics**

The mean ideal number of children by background characteristics in selected irrigated and non-irrigated villages for two broad age group of women is depicted in Table 7. It is observed from table that the ideal family size is smaller in irrigated villages as compared to non-irrigated villages. The eligible women in irrigated villages have reported smaller ideal family size as compared to the eligible women in non-irrigated villages. The eligible women in both the irrigated and non-irrigated villages in the age group, 15 to 30 years have reported smaller family size than in the age group 31 to 49 years. This indicates the changes that are taking place in preference of small family in recent period.

## **FAMILY PLANNING**

### **Knowledge and Use of Family Planning**

After examining the preference and actual child bearing of eligible women, an attempt has been made to examine the knowledge and use of family planning methods among these women. The question on knowledge and use of modern family planning methods was asked to

the entire selected eligible woman in the household of both irrigated and non-irrigated villages.

The knowledge and ever use of contraceptive methods for eligible women is given in Table 8.

It is revealed from table that the knowledge of any method is universal in irrigated villages whereas 88 percent of the respondents in non-irrigated villages had knowledge of any method. The female sterilization is found to be mostly known method followed by condom, pill and male sterilization in both irrigated and non-irrigated villages. The ever use of any contraceptive methods is higher 62.8 percent in irrigated villages as compared to lower 54.6 percent in non-irrigated villages. The female sterilization is most popular and widely prevalent among the users of family planning methods in case of both irrigated and non-irrigated villages. Among 320 eligible women interviewed in irrigated villages 139 of them are found to have accepted female sterilization i.e. 43.43 percent of the total respondents. Out of the total 282 respondents in non-irrigated villages 105 accepted female sterilization i.e. 37.23 percent of the total respondents. This clearly indicates that acceptance of female sterilization is highest in both irrigated and non-irrigated villages.

### **Socio-economic Differential in Current Use of Family Planning in Irrigated Villages**

After examination of the knowledge and use of family planning methods, it would be appropriate to see differentials in use of family planning by selected characteristics in irrigated villages. The socio-economic differential in current use of family planning

methods in irrigated villages is depicted in Table 9. The selected variables are broad age groups of women, mother's education, caste, husband's occupation and total income of the household. The use of modern contraceptive method varies with broad age groups of the women showed that it is

**Table 8: Knowledge and Ever Use of Contraceptive Method for Eligible Women in Selected Irrigated and Non-Irrigated Villages, 2000**

Any Methods	Irrigated Villages		Non-Irrigated Villages	
	Knowledge Number (Percent)	Use Number (Percent)	Knowledge Number (Percent)	Use Number (Percent)
Any Method	315 (98.44)	201 (62.81)	248 (87.94)	154 (54.61)
Condom	290 (90.63)	16 (5.00)	232 (82.26)	14 (4.96)
Pill	285 (89.63)	24 (7.19)	223 (79.07)	18 (6.38)
Copper T	242 (75.63)	12 (3.75)	176 (62.41)	10 (3.55)
Female Sterilization	306 (95.63)	139 (43.43)	234 (82.98)	105 (37.23)
Male Sterilization	256 (80.00)	10 (3.12)	203 (71.98)	7 (2.48)
Not using any Method	5 (1.56)	119 (37.19)	34 (12.06)	128 (45.39)
N	320	320	282	282

lowest in 15 to 24 age group and maximum for older age groups. The contraceptive prevalence rate (CPR) is found to be 62.19 percent in irrigated villages. The differential in use of female sterilization with respect to educational level indicates that it is higher among illiterate as compare to other temporary methods and educated groups. The differential in use of current method of contraceptive by main occupation of the husband shows that cultivators and agricultural labourers mostly use female sterilization. The use of contraceptive by total household income showed that the use is less in middle-income groups with annual income of 15000 to 50000 as compared to other income group. It is further found that female sterilization is mostly prevalent in lower income groups.

### **Socio-economic Differential in Current Use of Family Planning in Non-Irrigated Villages**

After examination of the knowledge and use of family planning methods and differentials in use of family planning by selected characteristics in irrigated villages, it would be appropriate to see differentials in use of family planning by selected

characteristics in non-irrigated villages. The selected variables are broad age groups of women, mother's education, caste, husband's occupation and total income of the household. The socio-economic differential in current use of family planning methods in non-irrigated villages is depicted in Table 10. The use of

**Table 9: Socio-economic Differentials in Current Use of Family Planning Methods in Irrigated Villages, 2000.**

Characteristics	Female Sterilisation	Male Sterilisation	Condoms	Pill	IUD	Any method	Not using any method	No. of women
Age groups								
15-24	-	-	7.81	12.50	4.69	25.00	75.00	64
25-39	53.75	3.75	4.38	5.63	5.00	70.01	29.99	160
Above 40	54.16	4.16	4.17	10.42	1.04	73.95	26.05	96
15-49	43.12	3.13	5.00	7.19	3.75	62.19	37.81	320
Education								
Illiterate	57.53	-	2.74	4.11	1.37	65.75	34.25	73
Primary	54.67	2.67	4.00	5.33	4.00	70.67	29.33	75
Middle School	47.54	3.28	3.28	4.92	4.92	63.93	36.07	61
High School	40.98	-	8.20	9.84	8.20	67.22	32.78	61
Above High School	40.00	-	10.00	8.00	6.00	64.00	36.00	50
Caste								
SC	46.05	1.31	6.58	3.95	2.67	60.53	39.47	76
ST	41.02	2.56	-	7.69	-	51.28	48.72	39
NT	40.74	3.70	-	11.11	-	55.56	44.44	27
OBC	50.45	1.80	6.31	8.11	6.31	72.98	27.02	111
Others	52.24	-	2.98	4.48	4.48	64.18	35.82	67
Husbands occupation								
Cultivation	57.22	2.22	5.55	6.66	2.22	73.89	26.11	180
Agril. Labourer and others	45.45	2.27	4.54	6.82	4.54	63.64	36.36	44
Service	42.86	2.38	9.09	4.76	7.14	66.67	33.33	42
Business	48.15	-	5.55	7.41	5.55	66.67	33.33	54
Total income								
Less than 15000	60.61	3.66	-	3.03	-	66.67	33.33	99
15000-30000	48.54	1.94	3.88	7.77	4.85	67.00	33.00	103
30000-50000	45.45	-	9.09	6.06	7.57	68.18	31.82	66
Above 50000	48.15	3.70	7.41	7.41	3.70	70.37	29.63	27

**Table 10: Socio-economic Differentials in Current Use of Family Planning Methods in Non-Irrigated Villages, 2000.**

Characteristics	Female Sterilisation	Male Sterilisation	Condoms	Pill	IUD	Any method	Not using any method	No. of women
Age groups								
15-24	-	-	7.14	10.71	5.36	23.21	76.79	56
25-39	45.75	3.27	5.23	5.23	3.92	62.09	37.91	153
Above 40	50.68	4.11	2.74	8.22	1.37	67.12	26.05	73
15-49	37.94	2.84	4.96	6.38	3.55	55.67	44.33	282
Education								
Illiterate	48.96	2.08	4.17	5.21	3.13	63.55	36.45	96
Primary	47.19	3.37	4.49	4.49	3.37	62.92	37.08	89
Middle School	43.24	2.70	5.41	10.81	-	62.16	37.84	37
High School	38.23	-	2.94	14.71	2.94	58.82	41.18	32
Above High School	35.72	-	7.14	17.86	7.14	67.86	32.14	28
Caste								
SC	49.28	1.45	5.80	4.35	2.90	63.78	36.22	69
ST	43.33	3.33	-	13.33	-	60.00	40.00	30
NT	42.86	-	-	9.52	-	52.38	47.62	21
OBC	52.94	1.96	5.88	8.82	4.90	74.50	25.50	102
Others	53.23	-	1.61	4.84	4.84	64.52	35.48	62
Husbands occupation								
Cultivator	56.74	2.25	5.62	6.74	2.25	73.60	26.40	178
Agri. Labourer and others	43.75	6.25	-	12.50	-	62.50	37.50	32
Service	40.00	6.67	10.00	10.00	3.33	70.00	30.00	30
Business	25.00	6.82	13.64	18.18	6.82	70.46	29.54	44
Total income								
Less than 15000	40.41	2.07	7.77	10.88	1.04	62.18	37.82	193
15000-30000	29.41	5.88	8.82	11.76	5.88	61.76	38.24	68
30000-50000	15.38	-	15.38	38.46	7.69	76.92	23.08	13
Above 50000	-	-	10.00	60.00	10.00	80.00	20.	10

The differential in use of current method of contraceptive by main occupation of the husband shows that cultivators and agricultural labourers mostly use female sterilization. The use of contraceptive by total household income showed that the use is less in middle-income groups with annual income of 15000 to 50000 as compared to low- income group. It is further found that female sterilization is mostly prevalent in lower income groups. The female sterilization is mostly prevalent in lower income group of both irrigated and non-irrigated villages. The comparison of irrigated and non-irrigated villages showed that contraceptive prevalence rate is higher in irrigated villages i.e. 62.19 percent as compared to lower 55.67 percent in non-irrigated villages. The use of temporary methods is higher in irrigated villages as compared to non-irrigated villages. From the analysis, it may be concluded that



promotion of other spacing methods among low-income group, illiterate, agricultural labour would increase contraceptive use and reduce fertility in both irrigated and non-irrigated villages. This would also improve the mother's health and enhance child survival.

### **Number of Living Children at the time of Sterilization**

As a larger proportion of respondents are sterilized in both irrigated (43.12) and non-irrigated villages (37.94), the analysis of these groups of women would give an indication of completed family size and the state of demographic behaviour. The distribution of women's age at the time of sterilization by number of living children in both irrigated and non-irrigated villages is given in Table 11. The age has been split into three broad age groups, namely less than 25, 25 to 39 years and above 40 years. It can be seen that out of the 202 women who are sterilized, 23 of them are in less than 25 years of age group, 105 are in 25 to 39 years age group and 74 are in the age group of above 40 years in irrigated villages. In case of non-irrigated villages, out of the 134 women who are sterilized, 10 of them are in less than 25 years of age group, 55 are in 25 to 39 years age group and 69 are in the age group of 40 years and above.

**Table 11: Percentage Distribution of Sterilized Women with the Number of Living Children in Both Selected Irrigated and Non-Irrigated Villages, 2000.**

Number of Living Children	Irrigated Villages			Non-Irrigated Villages		
	Age less than 25	25 to 39 Years	40 Years and Above	Age less than 25	25 to 39 Years	40 Years and Above
1	-	4.76	-	-	-	-
2	39.13	25.71	2.70	20	21.82	15.94
3	43.48	36.19	33.78	40	32.73	27.54
4	17.39	16.19	32.43	30	27.27	28.98
5	-	11.43	20.27	10	16.36	24.64
6	-	5.72	10.81	-	1.82	2.90
Total Percentage	100	100	100	100	100	100
N	23	105	74	10	55	69

This indicates that a larger proportion of older women accept female sterilization in both irrigated and non-irrigated villages. It may be observed that a larger proportion of currently married women with two or three living children opted for female sterilization in case of irrigated villages whereas in case of non-irrigated villages larger proportion of currently married women with two, three or four living children opted for female sterilization. It would be interesting to compare the sterilized and non-sterilized women by selected characteristics. The variables selected are age group, marital duration, education,

income and land holding size. The percentage distribution of sterilized and non-sterilized women in both irrigated and non-irrigated villages by their selected characteristics is presented in Table 12. It is observed from the table that though a larger proportion of non-sterilized women are in the age group of 25 to 39 in both the irrigated and non-irrigated villages, a larger proportion of them have marriage duration of less than 10 years. Among users of family planning, a larger proportion of women are with marriage duration of 11 to 20 years while among non-sterilized women a larger proportion are with marriage duration of less than 10 years in both irrigated and non-irrigated villages. A larger proportion of sterilized women are illiterate and primary school as compared to educated groups. There is no significant variation in the acceptance of sterilization with respect to total income and land holding size. The comparison of irrigated

**Table 12: Percentage Distribution of Sterilized and Non-Sterilized Women in Irrigated and Non-Irrigated Villages by Selected Characteristics, 2000.**

Characteristics	Irrigated Villages		Non-Irrigated Villages	
	Sterilized Women	Non-Sterilized Women	Sterilized Women	Non-Sterilized Women
Age groups				
15-24	-	21.19	-	20.95
25-39	65.35	60.17	60.45	64.19
Above 40	34.65	18.64	39.55	14.86
Marriage duration				
10 years	11.88	65.25	9.46	64.86
11 to 20 years	60.40	21.19	55.22	20.95
Above 20 years	27.72	13.56	34.33	14.19
Living Children				
No child	-	5.08	-	6.08
1	3.96	22.88	-	23.65
2	23.27	34.75	23.13	31.76
3	39.60	20.34	36.57	14.19
4 and above	33.17	16.95	40.30	25.68
Wives education				
Illiterate	23.88	17.57	28.22	20.34
Primary	26.12	20.95	29.21	22.88
Middle school	20.90	22.30	18.81	21.19
High school	14.18	20.27	13.86	19.49
Above High School	17.91	18.92	9.90	16.10

Total income				
Up to 15000	25.25	26.27	27.61	25.00
15001-30000	35.15	36.44	37.31	36.49
30001-50000	24.26	23.73	35.08	33.78
Above 50000	15.35	13.56	-	4.73
Land holding size	7.92	6.78	5.97	7.43
No land	27.72	30.51	28.36	32.43
Up to 2.5 acres	42.57	44.92	44.03	45.95
2.51-5 acres	17.33	14.41	15.67	10.14
5.01 acres-10 acres	4.46	3.39	5.97	4.05
Above 10 acres				

and non-irrigated villages show that a larger proportion of sterilized women are in the age group of 25 to 39 in irrigated villages as compared to non-irrigated villages whereas the percentage of non-sterilized women are higher in the age group 25 to 39 in non-irrigated villages as compared to irrigated villages. Among the sterilized women, a larger proportion of women are with marriage duration of 11 to 20 years in irrigated villages as compared to non-irrigated villages whereas the percentage of women with marriage duration of above 20 years are higher in case of non-irrigated villages as compared to irrigated villages. The majority of the sterilized and non-sterilized women are illiterates or with primary school education

in non-irrigated villages as compared to irrigated villages. It is found from the above analysis that there is a significant variation in fertility and use of family planning in irrigated and non-irrigated villages. The irrigated villages experienced low fertility and higher acceptance of family planning whereas non-irrigated villages had higher fertility and lower acceptance of family planning. The process of demographic change has also indicated substantial variation with respect to socio-economic development such as education and income.

### **Factors determining fertility differentials**

#### **Family planning**

The prevalence of family planning in irrigated villages can be observed from Table 7 and information provided by key informants and from our research workers who have lived in the villages temporarily. For example, our resident researcher in Pratapgad stated that: "In Pratapgad village the contraceptive pill and condoms are very popular. There are some medical shops that sell contraceptive pills. From observations of rubbish piles, I have come across empty packets of contraceptive pills in most piles of rubbish".

A report from our researchers in Pratapgad and Dharmapuri identifies the norms about low fertility. Some men have done

vasectomies, and some women have received sterilization because they wanted to limit their family size like the others who have gotten sterilized. Presently, if a couple have many children in a short space of time, he/she tends to be ridiculed. A lot of children are seen as a result of shameful and uncontrollable behaviour.

The conditions and attitudes described above may be contrasted with the attitudes of people in the non irrigated villages: Villagers in Saigaon and Pendhari are aware of family planning. But they feel that contraception is a sinful act; they thought that people nowadays are not afraid of committing a sin or may be because there was no real life of the baby involved yet. Villagers still believe that contraception is a sin, but not as bad the practice of abortion.

The situation in Saigaon and Pendhari, concerning family planning is reported by our researcher is as follows:

"Childbirth was an occurrence that nobody in the village sought to alter, including infant and child mortality. Mortality, occurring at a higher rate affects the decision by married couples to have another child". Sunil Janardhan Wahane of Pendhari told me that:"I think that I want to have many children in case one of them dies. If I have only one or two children and if they die, I will then have no children". At this time, Sunil had no children. There is also a local belief that if you eat papaya or leaves of unknown forest plants that will prevent pregnancy but this is found to be ineffective.

The family planning prevalence is more widespread in the irrigated villages than in the non-irrigated villages. Norms concerning family size differ and the beliefs in smaller families have influenced people in the irrigated villages to accept the practice of contraception. But in the control villages, large families are still valued and contraception is often viewed as sinful.

### **The value of children**

Why family planning is practiced in one area and not in another? Some differences may be because of health inputs, proximity to the health center, and access to information. However, in the irrigated villages there exist supply and demand. The health centers in non-irrigated villages are underused in terms of contraceptive services (as well as other services), reflecting little interest in limiting or spacing births.

Small family norms in the irrigated villages may exist because

of changing values with respect to children. With increasing development and modernization, people in the irrigated areas have adjusted their fertility behaviour. Without this, they would have been handicapped in their efforts to take advantage of the economic opportunities offered to them by the dam construction. The desire to move ahead, and the possible realization of that desire have changed a modification of reproductive behaviour. Villagers have seen that the old fertility standards of a large family would hamper their efforts to get ahead. "Too many children, too little money" was a saying prevalent in the irrigated villages.

But for villagers struggling to maintain a livelihood, the concept of family limitation was not of major significance. In the non-irrigated area, child labour in agricultural activities is still highly valued. Our Saigaon and Pendhari researcher informs us that: "Boys and girls tend cows, goats and buffaloes. If they come across any vegetables, they pick them to take home. From the age of ten, boys are working on the field. Girls, eight years and more are already experienced in house chores, which are seen as preliminary for all good housewives. In the morning, girls (age 8 to 14) cook rice, clean house and fetch water. They remain at home and take care of the very young children, while others go to the fields.

The nearly self-sufficient lifestyle of these villagers can be seen in their food consumption. Subsistence agriculture may be defined as a level of living derived from agricultural production on which one can barely exist. This, which therefore permits no surplus to be invested, sold, or otherwise used to improve the standard of living. A family must use all possible labour inputs to provide for such basic necessities as food, shelter, and clothing. The child labour is essential in very poor households. Above this subsistence level, the utility of children changes with household's economic condition, and the concept of family limitation takes on some meaning.

### **The costs of children**

The cost of childbearing is higher in the irrigated villages rather than in the non-irrigated villages. Food expenses are high because food is purchased at the market and not hunted or gathered. Children are dependents primarily because they stay in school longer. Compulsory education pulls children from the fields, and closer contact with teachers and educational authorities makes it more difficult for parents to keep their children at home tending their paddies. The cost of childbearing also is quite high, as villagers have come to use the health facilities either at the private clinics or taluka/district place, for childbearing and medical treatments.

Parents feed their children well in irrigated villages. Infants wear store-bought clothes, along with gloves and socks to prevent them from scratching themselves. Villagers from Pratapgad and

Dharmapuri are influenced by what they see on sale in town for their babies. They buy many items such as toys, baby walkers (used to teach children to walk), and steel-framed cradles meshed with mosquito netting. Parents send their children both sons and daughters to get more education (grade six and above) if they desire. Thus, the cost of child rearing, including medical costs, clothing, toys, and education, are fairly high in the irrigated villages, whereas most of these costs are not incurred in the non-irrigated villages.

In non-irrigated villages, the cost of childbearing is almost negligible. In many cases, a traditional birth attendant or a trained birth attendant assist in the delivery, but sometimes just the expectant mother's relatives help out. Children are fed local foods, and there is a higher prevalence of breastfeeding. Older children watch the babies so that mothers are free to tend the paddies and work around the house. Few parents purchase store-bought clothes for children in non-irrigated villages. Many infants and young children do not wear any clothes at all. Toys are made from local materials rather than bought, and cradles are made from an old bath towel tied to two house posts or trees when the mother is working in the field. Education is only up to the compulsory level, and during the harvest season, teachers allow children to leave the school early to help with the harvest.

### **The status of woman**

There are relatively few differences in gender roles in both irrigated and non-irrigated villages, though with increasing modernization in the irrigated villages, a certain degree of role differentiation has arisen. With the advent of mechanization, men have taken on a more dominant role. Men use and maintain the all-purpose machines. This is an important beginning for role differentiation because the machine is used in many facets of daily village life. Since men are working on machines, women have moved into the sale of produce and budgeting activities. Before mechanization, budgeting and finances were handled within the family unit with no specific division of labour.

Kamla, who studied village life in Kaneri (not far from our present study areas) in 1968, stated that there is not much specialization of labour between the sexes, and, as a result, no role incompatibility. Men and women both work in the paddy fields. There are some jobs that women do not do such as ploughing, clearing forest, cutting wood and so as preparing food is considered as a task for woman, but if the housewife is away, then the man has to do it. Another job that both husband and wife do is child rearing. With the exception of separation of tasks mentioned above, it is found that there are no divisions of labour between the sexes in Kinhi. This is due to the closeness of family unit, which has also been

observed in some other areas of the country.

### **Modernity**

Smaller family size norms were formed, to an extent, by exposure to external influences. With the increase in transportation and communication, villagers in the irrigated area are able to compare and contrast the differences between themselves and other villages or towns, creating a motivation to move ahead. Goals for social mobility began to take shape with increased education of children. Information about family planning helped villagers to see the benefits of a small family and is linked to control fertility. All of this to increasing income. With electrification in irrigated villages, the acquisition of household appliances, such as television, radio, and refrigerator, etc., became common. A process of weighing has started to emerge between more children on the one side and more material goods on the other.

The non-irrigated villages lack all the amenities just described. They have poor transportation and villagers are concerned with the immediate problems of hand-to-mouth existence. As a result, no planning is undertaken, nor is planning possible. The economy is what we may term as a self-perpetuated recycling economy. A non-expanding economy wherein the passage of time is seen in seasons and years, and the problems of survival are experienced daily. It is self-perpetuated because it can exist with little outside contact; it is recycling because in a sense what is taken from the land is given back, and taken again at the same rate.

### **SUMMARY AND CONCLUSIONS**

The present paper is an attempt to study the effects of an irrigation project on fertility and contraceptive. As expected, the irrigation project changes fertility and contraceptive behaviour of the population in irrigated areas. The irrigated area has lower fertility and higher child survival as compared to non-irrigated area. The MCEB varies significantly with respect to mother's education, husband's education, husband's occupation, household income, caste of the household and marital duration in both irrigated and non-irrigated villages. The difference in MCEB and MCS declines with mother's education. The knowledge of any modern method is almost universal in irrigated villages whereas 88 percent of the respondents in non-irrigated villages had knowledge of any method. Female sterilization is found to be mostly known method followed by condom, pill and male sterilization in both irrigated and non-irrigated villages. The use of family planning by background characteristics such as age groups, wives education, caste, income of household, operational land holding and husbands occupation has shown substantial variation in both irrigated and non-irrigated villages. The differential in use of female sterilization with respect to educational level indicates that it is larger among illiterate as compared to other temporary methods in both the irrigated and non-irrigated villages. Similarly, the differential in use of current method of contraceptive in both the irrigated and non-irrigated villages by occupation of the husband reflects that use of female sterilization is mostly popular among cultivators and agricultural labourers.

The hypothesis, the perceived cost of children would be higher in irrigated villages because, with greater social and economic development, parents would have higher expectations

for their children (more education, better health, etc.). The value of children as farm labour in irrigated villages would also tend to be lower. For these reasons it was expected a higher rate of contraceptive practice in irrigated villages and a final outcome of lower fertility. It is found that indeed the cost of children was higher in the irrigated villages. Childbirth, as well as child rearing, included many costs not found in the non-irrigated villages, such as transportation costs, hospital bills, medical expenses, store-brought clothing, children's play equipment, etc., higher education was expected of the children, and this was costly too. With the increasing costs and decreasing economic utility of children, contraception became more readily accepted among villagers in the irrigated villages. These demographic changes might be due to the socio-economic development induced by irrigation project. Population differentials between the irrigated and non-irrigated villages were caused by various developmental inputs in combination, not just any single one. Irrigation was only one among a number of factors contributing to the observed population changes.

### **POLICY IMPLICATIONS**

1. The irrigation project helped to lower fertility through increased agricultural production, which resulted in increased incomes and mechanization, which led to less labour needed and, therefore, less demand for child labour. Thus, the economic benefits of children declined, resulting in a lower demand for children. These new attitudes, together with access to family planning information and techniques, contributed to a lower birth rate. Since this phenomenon was not observed in the non-irrigated areas.
2. The existence of a family planning programme in itself does not necessarily lead to a decline in fertility. Therefore there is a need to popularize male sterilization and temporary methods like condom, pill and IUD in both irrigated and non-irrigated villages.
3. Higher fertility in the non-irrigated areas was a major obstacle towards the development of norms regarding a smaller family size. There, any attempt to reduce the fertility should be implemented in conjunction with an attempt to decrease mortality and morbidity. In the irrigated areas, apparently improved health and nutrition affected the number of births required to meet desired family size.

From the above analysis, it may be concluded that rural development can more effectively reduce the fertility rate if it emphasizes more equal distribution of benefits. This would entail a more widely dispersed development programme, stressing wider improvements in conditions that influence fertility reduction, such as sanitation and health, income, education, and the overall standard of living. The study shown that how development projects, though beneficial for the population they are to serve directly, may cause problems to nearby. It is important for planners to recognize such possibilities in order to minimize the unintended negative consequences of rural development projects.

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