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DETERMINANTS OF IMR IN VERY HIGH INFANT MORTALITY AFRICAN COUNTRIES

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ABSTRACT

An Important factor which militates against acceptance of the small family norm by reproductive couples, Is the uncertainty about their child's survival. A decline In the Infant mortality reduces the number of children required, to achieve a given family size and increases motivation to practice birth control. In order to find out the determinants behind infant mortality, eleven countries from African region have been chosen from very high under-five-mortality-rate countries (over 170 median). Data on these countries have been taken from "The State of the World's Children", 1990. The methodology adopted for the present study Is Pearson's Coefficient of Correlation, to find out the importance of variables that affected IMR, In the order of ranking position, In terms of coefficient values. The study finds the role of infants with low birth weight, immunization, fertility, and female literacy paying an important role in mortality decline.

In 1985-1990, for the world as a whole, infant mortality was estimated to have been 70 per 1000 live births. For that period, the lowest rates among the major “regions were 10, 8 and 9 per 1000 live births for Northern America and Northern and Western Europe, respectively. While these rates were comparatively low on an interregional basis, it is worth noting that they were more than twice the infant mortality rate of 5 per 1000 estimated for Iceland and Japan for 1985-90. In contrast, the highest infant mortality rate for 1985-1990 among the major areas was 103 for Africa and 72 for Asia, with 102 in Southern Asia. Stated in somewhat more graphic terms, the rates mean that, on an average, one of every 10 children born in Africa or Southern Asia dies before reaching the first birth day. Again, these rates were regional averages and considerable variation exists within each area. For example, the infant mortality rate in Southern Asia for 198'5-1990 ranged from a relatively low-rate of 28 per 1000 live births for- Sri Lanka to 172 per 1000 for Afghanistan, while in South-Eastern Asia the range which was observed from 8 in Singapore to 166 in East Timor, and in Africa from 14 in Reunion to 169 in Mali.

The differential pace of infant mortality change was related to differential pace of economic and social progress among the countries and to the differential impact of health care systems. Thus, in order to reduce the level of infant mortality rate in these areas/regions, where it was very high, it becomes necessary to identify the factors affecting the infant deaths in a manner useful for policy formulation and programme intervention.

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METHODOLOGY

To study the factors affecting infant mortality, Pearson's Coefficient of Correlation Technique has been adopted to explain the relationship between the selected independent and dependent variables. Eleven African countries have been selected from the very high under five infant mortality category (over 177 median), stated in the 1990 UNICEF "The State of World's Children". The countries selected are Mozambique, Mali, Angola, Malawi, Niger, Chad, Central African Republic, Somalia, Rwanda, Burundi and Nigeria.

FINDINGS

Coefficient values between socio-economic-demographic-nutrition/health variables and the infant mortality rate has been presented in Table 1.

TABLE 1

PEARSON'S COEFFICIENTS OF CORRELATION BY AFRICAN STATES BETWEEN INFANT MORTALITY AND MEASURES OF SOCIO-ECONOMIC-DEMOGRAPHIC-NUTRITION AND HEALTH DEVELOPMENT

INDEPENDENT VARIABLES	DEPENDENT VARIABLES Infant Mortality Rate
Social Variables	
1. Adult literacy rate	-0.13
2. Male literacy rate	-0.18
3. Female literacy rate	-0.41
Economic Variables	
4. GNP per capita (US$)	-0.04
5. Per cent population (urbanised)	-0.006
Demographic Variables	
6. Total fertility rate	-0.42
Nutrition Variables	
7. Average index of food production per capita	-0.008
8. Dally per capita calorie supply as per cent of requirements	-0.26
Health Variables	
9. Per cent of infants with tow birth weight	+0.44
10, Per cent fully immunized one year children by a) Tuberculosis	-0.33
b) DPT	-0.42
c) Polio	-0.42
11. Per cent women immunized against tetanus	-0.12
12. Per cent of birth attended by trained health personnel	-0/15
13. Per cent population with access to health services	-0.13

The coefficient values, indicated per cent of infants with low birth weight, an important determinant of infant mortality in Africa. The coefficient value being (+0.44). It means that, the countries where the percentage of infants with low birth weight is high, infant mortality tends to be high and *vice versa.* Maternal diet and nutritional status during pregnancy affect the fetal growth and birth weight. Maternal

food supplementation during pregnancy reduces the proportion of low-birth weight infants and neo-natal mortality. Babies born to the women younger than eighteen years, were more likely to be born too early and to weigh too little at birth. Such babies were much more likely to die in the first year of their life, because, the woman was not physically ready to begin bearing children until she attains about eighteen years of age. On the other hand, if a woman was over the age of 35, and had three or more pregnancies, then another pregnancy may give birth to a baby with disabilities or with low-birth weight. After three pregnancies, an increased risk of serious health problems has been noticed, such as anemia (thin blood) and hemorrhage (heavy loss of blood). This becomes much more after four pregnancies. If the previous births have not been spaced more than two years apart, a woman's body can easily become exhausted by repeated pregnancies, child birth, breast-feeding and looking after small children. As a result, the child fails to grow and develop properly and often die within one year.

Full immunization of one year child by T.B., DPT. and Polio plays an important role in bringing down the infant mortality rate. The values of the correlation coefficient are statistically significant at one per cent level. Immunization protects against diseases which can cause poor growth, disability and death. A child who is not immunized is very likely to get measles and whooping cough. Such diseases can kill the child. But even children, who survive these diseases, are weakened by them and may die later from malnutrition or other illnesses. An unimmunized child will almost certainly be infected with polio virus. And for every 200 children who are infected, one will be crippled for life time.

In most of the countries, decline in mortality have occurred as a result of the expansion in health care. The danger of pregnancy and child birth could be prevented by providing the facilities at shorter distances from the place of residences. But the coefficient value of (-0.13) explains no significant relationship between health services and IMR. Similar insignificant coefficient value (-0.15) has been for the variable "per cent of births attended by trained health personnel", though the role of trained health personnel and avoiding the infant deaths is of crucial importance. A trained birth attendant will know, where labour has gone on for too long (more than 12 hours) and a move to hospital becomes necessary; how to keep the birth clean and reduce the risk of infection; how to cut the chord cleanly and safely; what to do if the baby is being born in the wrong position; what to do if too much blood is being lost; when to call upon more expert medical help; how to help the mother prevent or postpone another birth. Besides, the selected health variables,. higher fertility seems to result in higher child mortality, probably due to younger age at marriage and higher parity births. In societies, where many girls marry at an early age, before the age of 18, the health risks for the mother and child increases. And if the space between the births is less than two years, the risk of death increases by about 50 per cent. The coefficient value of (-0.42) signifies the important role of total fertility rate in increasing the infant mortality rate.

High infant mortality has also affected with the level of GNP or poverty. The rich countries have been well placed in terms of health facilities and services. On the other hand, poor have less physical and economic access to health facilities and

services; ill-housed, without adequate sanitation facilities; have no knowledge of medical and sanitary requirements; and were often under nourished and more susceptible to disease, and constantly exposed to the risk of mortality. Over 90 per cent of the births in poor communities occur at home unattended by a trained midwife and under very poor hygienic conditions1. Consequently, neo-natal death rates in respect of poor households are invariably more than double the rate for high income groups. But here the role of GNP in *relation to* IMR is not significant, which means that GNP does not affect IMR significantly.

Similarly, urbanization does not have any solid influence on IMR according to the results available. Although it is expected, that in rural areas because of superstitions and improper medical facilities as compared to urban areas may have an impact on infant mortality rates.

Nutritional status has an important role to play in determining infant mortality rate. Differential level of food intake and other consumption between men and women at the household level, affects the infant mortality. Those healthy girls who were well-fed during their own childhood and teenage years, have fewer problems in pregnancy and child-birth. But the coefficient value between the selected nutritional variables and IMR is insignificant, which could be because of the selection of variables, due to lack of availability of data on specific determinants like nutrition status of the mother and the infant, which may have proved to have a significant impact on infant deaths,

Regarding the role of social factors in terms of literacy, surveys and studies showed inverse relationship between education and infant mortality, as education was found to be an important instrument in influencing attitudes and behavior of the people. For Indonesia, it was noted that the education of .both father and mother influenced child survival2. In the case of Republic of Korea, two simple arguments were provided to explain the observed relationship between parental education and infant and child mortality. Firstly, more educated parents provide their children with better nutrition and health care. Secondly, more educated Korean parents have fewer children on an average, which means in turn a wider average interval between births, and a longer birth interval - a decisive factor in lower infant and childhood mortality. For India, it was argued that "literacy (education) has a two-fold role to play". On the preventive side, literacy helps to reduce mortality by promoting social hygiene, and on the control side, the awareness generated has capitalized by making the best use of the medical facilities provided by the health programme3. Some studies have found mother's education to be important in reducing the infant mortality rate. For Indonesia, education of the mother had a stronger effect in reducing the child mortality rate4.

According to Karnataka study, which also aimed at exploring the relationship between maternal education and child survival, an educated woman has been accorded higher status than that of an uneducated one by her husband and by her mother-in-law. Consequently, it was agreed that an educated woman was more likely to insist on the right to participate in decision making and to urge decisions. She would also ensure that greater equality in allocating resources between

children of opposite sex and between the older and younger generations. A more educated mother would tend to treat and feed her sons/daughters. Equally; and further likely to identify, almost immediately when a child falls sick and to seek appropriate treatment. She would also persist with the treatment until the child has completely recovered5-6. The results obtained by this-study also confirms the findings that, in African countries female literacy has been significantly linked with the infant mortality, the coefficient value being -0.41.

In conclusion, study reveals that infants with low birth weight, immunization, fertility, and female literacy play an important role in determining the infant mortality Rates in the selected African countries. It further suggests, that through proper female education in terms of better utilization of health care, practicing family planning, physical and mental development of children and community development, will certainly help in reducing the infant mortality rates In the whole region7.

Lkkjk'k

जन्म लेने वाले बच्चों में से जीवित बचे रहने वाले बच्चों के विषय में अनिश्चितता के भयावश प्रजनन क्षमता वाले दम्पत्ति छोटे परिवार के आदर्श को स्वीकारने में झिझकते हैं। शिशु मृत्यु दर में गिरावट बच्चो की आवश्यक संख्या में कमी लाती है, परिवार के निर्धारित आकार को बनाए रखने में सहायता करती है और बच्चों के जन्म पर नियन्त्रण हेतु आवश्यक प्रेरणा प्रदान करती है। अफ्रीकी क्षेत्र कव पांच वर्ष से कम आयु वाले शिशुओं में अति उच्च मृत्यु दर वाले ग्यारह देशों को शिशु मृत्यु दर के निर्धारकों का पता लगाने के लिए चुना गया। इन देशों से संबंधित आंकड़े विश्व में बच्चों की स्थिति 1990 नामक पुस्तक से लिए गए। क्रम–विन्यास के अनुसार गुणांकों के मूल्यों और शिशु मृत्यु दर को प्रभावित करने वाले परिवर्तनों का पता लगाने के लिए पीयरसन की गुणांक सहसम्बन्ध प्रणाली को प्रस्तुत अध्ययन में आधार बनाया गया है। प्रस्तुत अध्ययन शिशु मृत्यु दर में गिरावट लाने के लिए जन्म लेने वाले कमजोर बच्चों, प्रतिरक्षण, प्रजनन क्षमता, स्त्री–साक्षरता इत्यादि की महत्वपूर्ण भूमिका के बारे में विशेष ध्यान दिलाता है।

REFERENCES

1. JAIN, A.K. (1985) Determinants of Regional Variations in Infant Mortality in Rural India. *Population Studies*, 39:(3).

2. COLDWELL, J.C. AND P.F. Mc DONALD Influence of Maternal Education on Infant and Child Mortality Levels and Causes; in *International Population Conference*, 2: p.79-95, Belgique, I USSP.

3. **KWON TAI-HWAN (1986) The Trends and Pattrns of Mortality and Health in the Republic of Korea; Report of a Study Undertaken in the Republic of Korea under the Project on Analysis of Trends and Patterns ot Mortality in** ***the ESCAP Region, Asian Population Studies Series No. 76,*** **ESCAP, Bangkok.**

4. **COLDWELL, J.C. AND P.P. Mc DONALD Influence of Maternal Education on Infant arid Child Mortality Levels and Causes; in** *International Population Conference,* **2: p.79- 95, Belgique, I USSP."** **.**

5. **COLDWELL, J.C. AND LADO T. RUZIOKA (1985) The Determinants of Mortality Change in South Asia** *in* **K. Srinivasan and S. Mukerji (eds.)** - *Dynamics of Population and Family Welfare,* **Bombay, Himalaya Publishing House.**

6. **COLDWELL, JOHN C, P.H. REDDY AND PAT COLDWELL (1983) The Social Component of Mortality Decline: An Investigation in South India Employing Alternative Methodologies.** *Population Studies,* **37:(2).**

7. **KRISHNAN, P. (1975) Mortality Decline in India, 1951 -61: Development** *vs.* **Public Health Programme Hypothesis.** *Social Science and Medicine,* **9:1975.**

SOCIO-ECONOMIC AND HEALTH VARIA8LES FOR THE SELECTED AFRICAN COUNTRIES

Countries	Total Adult Literacy Rate (1985)	Mm Literacy Rate (1985)	female Literacy Raw (1985)	GNP POT Capita uss . (1987)	Per cent Population Urbanised (1988)	Total Fertifty Hats (1988)	Average Index ot Food Production Per Capita (1979-eir 100 (1988)	Daily per Capita Supply as Percentage ot Require-ments (1984-86)	Percentage ot infants with Low Birth Weight (1962-88)	Percentage Fully Immunized (1987-86) One-year-old Children			I Per cent Pregnant Wwnen Immunized Against Tetanus (1987-86)	Per cant ot Birth Attended by Trained Health Personnel (1983-63)	Per ceril ot Population Access to Health Services (1985-87)	Infant Mortal!! Rata Under (1) (1986)
										TB	OPT	Polio				
Mozammqua	39	55	22	1*0	24	64	84	69	20	49	38	38	43	28	39	172
Mat	17	23	11	210	19 '	67	106	86	17	64	18	IB	17	27	15	168
Angola	41	49	33	300	27	6.4	85	62	17	32	12	13	19	15	30	172
Malawi	42	52	31	160	14	7.0	83	102	20	90	82	80	63	45	80	149
Niger	14	19	8	260	16	7.1	98 .	100	15	39	16	16	a	47	4J	134
Cnad	26	40	11	150	31	5.9	105	69	11	36	14	14	10	24	30	131
Central Airi - can Republic	41	53	29	330	45	59	83	86	5	33	24 26	24 25	20	68	45	131
Somalia	12	19	6	290	35	66	96	90	-	91	B0	78	26	2	27	131
Rwanda	47	61	33	300	7	8.3	75	81	17	66	54	54	43	22	27	146
Burundi	34	43	26	250	7	6.3	102	97	9	72	58-	57	69	21	61	111
Nigeria		54	31	370	34	7.0	96	90	20		-	-	20	40	40	104

Source: The State of the World's Children 1990, UNICEF

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FERTILITY REGULATION BEHAVIOUR IN PAKISTAN: RELEVANCE OF FERTILITY CONTROL WITH DEMAND FOR.SUPPLY OF CHILDREN AND COSTS OF FERTILITY REGULATIONS

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ABSTRACT

The disappointment with the supply oriented family planning policies of the 60s and 70s gave way to adopt an integrated welfare oriented approach of family planning in the country during recent years. The purpose of present study was to empirically substantiate the rationale of the 'New Approach'. A modified version of the Easter I in and Crimmins (EC) model of the determinants of deliberate fertility regulation has been estimated through Logit regression.

EC model hypothesizes that the deliberate use of fertility regulations may be explained through the 'motivation' of couples to adopt deliberate fertility regulations and costs of use of these fertility regulations. The analysis showed that couple's 'motivation' to deliberate use of fertility regulation has been the main deriving factor, while costs of fertility regulations seemed to have no impact on the future intended use of deliberate fertility regulations by the Pakistani families.

The main policy implication which emerges from this study, was that those families which do not have preconceived notion about their desired family size should be the 'Target-Group' of the 'New Approach' of family planning in the country. Present analysis also supports the view, that policies which promote 'Breast-Feeding' practices, extend 'Formal Education' of women and reduce 'Infant and Child Mortality Rate would also reduce the need for direct investment for 'Family Planning' in the country.

Pakistan has a history of 25.years of family planning. The failure of the *earlier* bureaucratic, centralized and almost supply oriented approaches of the 60s and 70s, have given way to an integrated, decentralized and population welfare oriented approach: Under this approach family welfare centers were supposed to provide a wide range of welfare oriented services to woman including child and maternal care, general health care, training of women in income generating skills, besides the

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family planning services. It was backed with an idea that these centers will gradually increase their emphasis on family planning as they earn credibility and confidence of the community. The new approach also envisaged the promotion of Remand-creating activities including a social policy which particularly takes into account as to "how in a society feasible changes can be effected in such fertility reIate4factors: as age at marriage, female education and employment, community responsibility for fertility control and the general status of women" (Working Group - 1983)'.

The purpose of this study was to empirically substantiate the rationale of %e new approach as compared to the earlier approaches. As a caveat, H may be mentioned at the outset that the 'New Approach' was slow working by definition itself. It may further be mentioned, that the relevant data was not available to evaluate the actual impact of the 'new' approach. It was rather confined to examine the likely impact, based on the old evidence.

THEORETICAL FRAMEWORK

There have been two competing approaches to explain the human fertility behavior. The socio-biological approach explains it primarily in terms of supply related 'intermediate fertility variables'2, 3, 4, 5. The alternative approach views demand for children *as* a consumer durable and a such explains it in terms of socio-economic variables like income, prices for port unity cost6,7,8. The third approach which was relatively recent, attempts to synthesize the two approaches incorporating both the demand and supply factors9,1 **vw3.** Under this approach the degree of motivation to regulate fertility has been weighed against the costs of its regulation. The degree of motivation depends on the difference between the potential family size (the number of surviving children which the household would have, if it did nothing deliberately to regulate its fertility) and the desired family size (the number of surviving children, which the family would want in a perfect contraceptive society). Each one of these variables depends on a number of other factors. The potential family size depends on the couple's natural fertility and the survival rate. The proximate determinants (intermediate variables) of natural fertility were identified as (i) extent of exposure (ape of marriage or duration of marriage), (ii) Fecundaoility (including coital frequency), (iii) spontaneous intrauterine mortality, and (iv) prevalence of permanent sterility*. The survival rate depends on mother's age and parity, socio-economic status, nutrition, availability of health services and so on. The desired demand for children on the other hand depends on (i) direct costs and benefits of children, (ii) their opportunity costs, (iii) the effects of income and wealth, and (iv) norms and tastes for children. Lastly, the costs of regulation of fertility include a variety of psychological and economic costs".

Ideally, all these factors should be included in the empirical analysis of fertility regulation behavior. Easterlin and Crimmins approach has been to analyse'it in two stages. In the first stage, they estimated the natural fertility by regressing it on its

*Though they exist in all societies, but vary in their impact. For details see Davis and Blake (1956); Bongaart and Potter (1983); Bongaart and Menken (1983); and Bulatao and Lee, eds, (1983).

**For a comprehensive discussion of Demand for Children, Supply ot Children and Fertility Regulations Costs, see Bulatao and Lee eds. (1983), Nag (1985), and Easterly and Crimmins (1985).

determinants and hence compute potential family size. In the second stage, they regressed fertility regulations indicator on potential family size, desired family size as reported by the respondents, measures of regulating costs like knowledge of family planning methods' and some variables reflecting individual attitudes. Several methods have been used to estimate the potential family size. In an earlier work they took the observed number of children born to non-contraception woman at the end of their reproductive life. Later they estimated it by first regressing the number of children ever born to all women on the contraceptive use variable and a vector of other proximate determinants of fertility". Then each woman's potential supply was obtained dropping the contraceptive use variable and substituting the actual values of other variables in the equation12. More recently they adopted a Tobit two stage procedure. However, all these approaches yield biased estimates of natural fertility1 V4,'5. Further the same scholar has estimated a reduced form of Easterlies model replacing the natural fertility by the factors which determine it. This was essentially the approach which has been adopted for the present study.

DATA AND MODEL

The study has been based on the data drawn from National Population, Labor Force and Migration Survey 1979-80 (PLM). Only currently, married, fecund, no pregnant women have been included. Three Logit models have been estimated "corresponding to current use, ever-used arid intended use of contraceptive practices. The set of explanatory variables has been the same for all the three models. This set consists of three groups of variables belonging to (i) the demand for children (Cd), (ii) the supply of children (Cn), and (iii) costs of family regulation (RC). The demand for children has been measured by the respondents reported desired family size. Instead of using it as a continuous variable, it has been used as a qualitative variable with four groups of family sizes. On the supply side, instead of separately estimating the potential family size like Easterlin and Crimmins did, the proximate determinants of natural fertility in the regression function itself have been included in the present study. These determinants, namely Duration of Marriage (DURMARY); First Birth Interval (FBI); Last Closed Birth Interval (LCBl); Breast Feeding in LCBl (MOBF); Pregnancy Wastage (PREGWAST), and Infant and Child Mortality Ratios (IMR); have been used as proxies for the intermediate variables3,4,5*. In the third group, the closest variable available in the survey which could possibly serve as a proxy for the cost of fertility regulations has been the number of family planning methods known to the respondents..Although, not ideal but for lack of more appropriate variables, it has been used in earlier studies also for this purpose.

Socio-economic variables also influence the behavior of family size control. However, their influence would presumably be picked up, at least partly by the suppjy and demand variables which have already been included in the model16! However the authors have also estimated Logit regressions including some or these socio-economic variables, besides the above mentioned supply and demand variables. These include the education and the work status of the respondents and of their spouses, and their place of residence**.

*See Appendix I for Specification of the Model.

ANALYSIS OF REGRESSION RESULTS

Empirical results have been presented in Table 1. The probability coefficients indicated that the higher the family size desired the smaller is the probability of using deliberate fertility regulations. This seems to be quite a robust result and has been true for the past, current and future intended users. It may be noted that the (probability coefficient has been the lowest in all the three models corresponding to the fatalistic answers. This strongly substantiates that those who were conscious of a desired family size (indicated by numeric responses) had more chances to use deliberate fertility regulations methods than others. However, it was not quite

TABLE 1

LOGIT ESTIMATES OF USE OF FERTILITY REGULATIONS BY CURRENTLY MARRIED, FECUND NON-PREGNANT PAKISTANI WOMEN (Women With Two or More Children)

Explanatory Variables	Units	Current Users		Ever Used		Intended Use	
		Estimates	Standard Error	Estimates	Standard Error	Estimates	Standard Error
Intercept		4.206***	0.132	4.538***	0.108	5.074***	0.089
DEMAND FOR CHILDREN							
Desired Family Size							
Upto 2 Children (a)	(1.0)	-	-	-	-	-	-
3-4 Children	(1.0)	-0.225**	0.113	-0.239**	0.092	0.002	0.081
5 or More Children -	(1.0)	-0.848***	0.124	-0.774***	0.100	0.303***	0.082
Fatalistic Answers	(1.0)	-1.368***	0.184	-1.319***	0.151	0.794***	0.094
SUPPLY OF CHILDREN							
DURMARY	(Years)	0.066***	0.004	0.035***	0.003	0.006**	0.002
FBI	(Months)	.-0.015***	0.002	-0.012***	0.001	0.004***	0.001
LCBl	(Months)	-0.004**	0.002	-0.003***	0.001	-0.001	0.001
MOBF	(Months)	-0.017***	0.004	-0.015***	0.003	-0.013***	0.002
PREGWAST	(Ratio)	1.173***	0.295	1.038***	0.239	-0.049	0.188
IMR"	(Ratio)	-1.702***	0.212	-1.464***	0.165	-0.657***	0.087
COST OF FERTILITY REGULATIONS							
KNOWN	(*)	1.604***	0.277	6.129 6723	11.115	0.0001	0.0001
		5889				5449	
Degree of Freedom		4492		5961		5437	
N		5002		5972		5447	

(a)Reference Category
***Significant at 0.10 level**
****Significant at 0.05 level**
*****Significant at 0.01 level**

obvious as to whether the fatalistic responses indicated desires for large families or intentions not to exercise any controls on family size.

The supply variables also showed interesting results. It revealed that longer exposures (proxies by duration of marriage) motivate fertility control, which "was true in all the three versions of the model. The influence of duration of marriage on probability of future use of fertility regulations by those who have never used has been relatively small but the overall influence, if all the three groups were considered together, was quite substantial. This means that the socio-economic policies which encouraged a reduction in marriage duration may be helpful in reducing fertility. Similarly, the results also confirmed that the shorter the first birth interval, last closed birth interval and duration of breast feeding periods were higher as was the probability of child bearing, which motivates to adopt fertility regulation. This implied that the policies which were conducive to encourage breast-feeding may help reduce the fertility. The only coefficient which yields ambiguous results corresponds to the pregnancy wastage ratio. This was perhaps, because, of the data corresponding to this variable was likely not have been revealed fully or correctly by -the respondents, because superstitious beliefs in this regards and / or possibly the painful experience to some extent compensated for the replacement effect. Lastly, the coefficient of infant and child mortality ratio was negative and significant indicated that more infant and child deaths provide disincentive for fertility control, which implied that those policies which promote reduction in infant deaths would also help to reduce fertility. The last variable included in this model indicated that the reduced cost or the increased knowledge of contraceptive methods does not * significantly increase the odds of their intended-use. This further implied that the motivational factors represented by the supply and demand variables were generally more important than the cost/knowledge of contraceptives. However, ' unfortunately, such motivational factors were very slow to respond.

The results of the extended versions of the above models which included other socio-economic variables have been presented in Table 2. The coefficients corresponding to the demand and supply variables remained significant as have been shown in the model. Among the socio-economic variables, education of the-respondent as well as, of her spouse was significant corresponding to the current and past users but surprisingly insignificant in the would be users. Urban residence also influences the probability of regulating family size in all the three models consistently. It was interesting to note that respondent's work-status does not significantly influence the family planning behavior. Findings of this study support an earlier study conducted by other scholars, they also reached a similar conclusion17. It may be mentioned that empirical evidence for the third world countries, regarding the compatibility of work and fertility regulation has not been conclusive18.

The last set of variables corresponds to the possible difference due to ethnic and cultural background. Expected probabilities of current use, ever-used and future intended use of deliberate fertility regulation practices seem to be higher for Punjabi families compared to Sindhi families, but much lower as compared to

TABLE 2
LOGIT ESTIMATES OF USE OF FERTILITY REGULATIONS BY CURRENTLY MARRIED, FECUND, NON-PREGNANT PAKISTANI WOMEN (Women with Two or More Children)

Explanatory Variables	Units	Current Users		Ever Used		Intended Use	
		Estimates	Standard Error	Estimates	Standard Erroi	Estimates	Standard Error
Intercept		2.936***	0.185	3.365***	0.152	4.782"*	0.107
DEMAND FOR CHILDREN							
Desired Family Size							
Uptrj 2 Children (a)	(1.0)	-			-	-	-
3-4 Children	(1.0)	-0.109	0,123	-0.111	0.101	-0.075	0.085
5 or More Children	(1.0)	-0 551***	0134	-0 480***	0.110	-0.310***	0.086
Fatalistic Answers	(1.0)	-1.152***	0.194	-1.068***	0.160	-0.795***	0.099
SUPPLY OF CHILDREN							
DURMARY	(Years)	0078***	0005	0.042***	0.004	0 005**	0.002
FBI	(Months)	-0.012***	0.001	-0.009***	0.001	-0.003***	0.001
LCBI	(Months)	-0.005**	0.002	-0.003***	0.001	0.001	0.001
MOBF.	(Months)	-0 007*	0.004	-0.006*	0 003	0.012***	0.002
PREGWAST	(Ratio)	0.777**	0327	-0.589**	0.259	-0.055	0.192
1MR	(Ratio)	- .163***	0222	-0.965***	0.171	-0.711 ***	0.090
SOCIO-ECONOMIC							
STATUS							
Wile's Education	(Years)	0.069***	0.010	0.058***	0.008	-0.002	0.007
Husband's Education	(Yeats)	0 026***	0006	0.024***	0 007-	0.003	0.004
Urban Residence	(1.0)	0348***	0 080 '	0.324***	0.066	0-121 ***	0040
WIFE'S WORK STATUS							
Farm Work	(1.0)	-0.317	0.367	-0.023	0.235	-0.212**	0.107
Non-Farm Workers	(1.0)	0.115	0169	0.119	0.140	-0.020	0.115
Never Worker*a)	(1.0)	-	-	-	-	-	
HUSBAND'S WORK STATUS							
Farmer	(1,0)	-0.101	0.109	-0.207**	0.089	-0.136***	0.045
Unskilled Worker	(1.0)	0.683	0.568	-0 469	0.550	0.506	0.391
Agri-Worker	(1.0)	0.059	0181	-0.059	0.157	-0171**	0.084
NO Work	(1.0)	0.083	0.081	-0.039	0.069	0.001	0 044
Others(a)	(1.0)	-	-	-		-	-
REGIONAL DUMMIES							
PanjaOi	(1.0)	0.266***	0.081	0.317***'	0.069	0.505***	0.044
Patrtan	(1.0)	0.104	0.120	0.389***	0.096	0.038	0.067
Balochi'	(1.0)	0.684***	0.138	0.716***	0.119	-0.044	0.105
Sindhi(aj	(1.0)	-	-	-	-	-	-
COST OF FERTILITY REGULATIONS							
KNOWN	(*)	1.500**"	0.287	5.914	10.709	0.0001	0.0001
		4797		5520		5393	
Degree ol Freedom		4480		5949		5425	
N		5002		5972		5447	

(a)Relerence Category
*Significant at 0.10 level
**Significant at 0.05 level
***Significant at 0.01, level

Balochi families in the case of current and past use, of such practices. Moreover, Punjabi families who never used any method of fertility control, seemed to be much more ambitious to adopt such practices as compared to their counterparts residing in other parts of the country.

CONCLUSIONS AND POLICY IMPLICATIONS

The purpose of present study was to empirically substantiate the rationale of New Approach' of family planning through explaining the current, past and future intended use of deliberate fertility regulations by Pakistani fecund married women, For this, a modified version of the Easterlin and Crimmms_model - formulate by Ahmed (1987) - was estimated through Logit regressions. The main feature of this model was that deliberate use of fertility regulations were viewed as determined by two policy-related variables: motivation for fertility regulation and costs of these regulations. Motivation for regulation was the theoretically difference between potential family size and desired family size. Potential family size has been the product of natural fertility and child survival rate. Thus motivation could be increased either by increasing natural fertility or the child survival rate or both, or by decreasing the demand for children. It could be expected that with economic development and socio-economic modernization potential family size will increase, whereas the demand for children will decrease. The estimation of potential family size, in the absence of contraceptive use, however, was problematic. Present analysis has shown that in the absence of the estimates of potential family size, the direct estimation of demand for children and supply of children variables could explain deliberate use of fertility regulations more meaningfully.

The results indicated that the desired demand for children emerged as the main deriving source in explaining deliberate-use of fertility regulation by Pakistani married women. The expected probability that deliberate fertility control has been used was much higher for those families who gave a numeric response for desired family size than those families who gave a fatalistic answer. This may indicate that women who gave the numeric response were systematically planning and having children. In other words, fatalism may be an indicator for no motivation to plan for birth spacing and family limitation. It was probably the time to motivate those women who express fatalism about their family size goals.

As far variables used *kit* proxies for potential supply of children, it was found that extended birth intervals and duration of breast-feeding and higher rate of infant and child morality reduces the probability of use of deliberate fertility regulation, for all type of users. Since, they were the indicators of postpartum amenorrhea and greater duration of- postpartum amenorrhea increases postpartum infecundity, which in turn decreases the probability of use of fertility control via reduction in the potential supply of children.

Inclusion of socio-economic variables improved the overall quality of regression as indicated by the corresponding lowerx2 values, the individual coefficients yield ambiguous results. Variables, corresponding to the province of Punjab and urban residence were consistently significant in all the models of past, current, and would be users, other variables yield mixed results. Possible

explanation of the somewhat inconsistent behavior lies in the fact that at least part of their influence has been reflected in the demand and supply variables which have already been included.

It has also been found that costs of fertility regulation was significant for current used contraception, where as it was insignificant for intention to use. This would imply that reduce cost of fertility regulations may not provide desirable results, particularly for those, who never used any method of contraception, but have only intention to limit their family size.

To conclude, the main policy implications emerged from this" study: <i) That those families which do not have pre-conceived notion about their desired family size should be the 'Target-Groups' of 'New Approach' of family planning in the country; and (ii) Present analysis also support the view that policies which promote 'Breast-Feeding' practices, formal education of women and reduce infant and child mortality rate would reduce the need for direct investment for 'Family Planning' in the country.

Lkkjk'k

छठे और सातवें दशक के दौरान जारी आपूर्ति–अभिविन्यास परिवार नियोजन नीतियों के प्रति असंतोष के कारण हाल ही के कुछ वर्षों में देश के अन्दर परिवार नियोजन के समेकित कल्याण से अभिविन्यास अभिगम को अपनाने में रूकावटें आ गई हैं। प्रस्तुत करना था। लॉजिट रिग्रेशन के माध्यम से जाने–माने प्रजनन क्षमता–निर्धारकों पर ईस्टरलिन और क्रिम्मिन्स मॉडल के संशोधित विवरण का अनुमान लगाया गया है।

ईस्टरलिन और क्रिम्मिन्स मॉडल जाने–माने प्रजनन क्षमता–नियन्त्रणों को अपनाने और इनकी लागत को ध्यान में रखते हुए प्रजनन क्षमता नियन्त्रण के जाने–पहचाने उपयोग के लिए दम्पत्तियों को प्रेरित करने का स्पष्टीकरण देता है। यहां किए गए विश्लेषण से पता चलता है कि प्रजनन क्षमता–नियन्त्रण के जाने–माने प्रयोग के लिए प्रेरणा इस दिशा में एक प्रमुख कारक है जबकि पाकिस्तानी परिवारों द्वारा प्रजनन क्षमता–नियन्त्रण की लागत का इसके भविष्य में प्रयोग की मंशा पर किसी प्रकार का कोई प्रभाव होता हुआ नहीं दीखता है।

प्रस्तुत अध्ययन से प्राप्त होने वाला मुख्य नीति–प्रभाव यह था कि परिवार के आकार के बारे में पहले से ही निश्चित न कर पा सकने वाले परिवारों को देश में परिवार नियोजन के नये अभिगम का लक्ष्य बनाया जाना चाहिए। वर्तमान विश्लेशण इस मत की पुश्टि करता है कि स्तनपान–प्रचलन को बढ़ावा देने वाली नीतियां, स्त्रियों की

औपचारिक शिक्षा का स्तर शिशु मृत्यु दर में गिरावट के परिणामस्वरूप देश में परिवार नियोजन के सीधे निवेश की आवश्यकता में कमी लाएगी।

REFERENCES

1. WORKING GROUP'ON DEVELOPMENT AND THE POPULATION FACTOR (1983) Population and Development Policies and Impact Monitoring Systems for Pakistan. Report prepared for the Ministry of Planning and Development, Government of Pakistan, Islamabad.
2. HENRY, L. (1958) Fondements the Oriques des Mesures de la Fecondite Naturelle. Revue de 1. Institute. International de Statistique. 21(3), Translated in On the Measurement of Human Fertility, Elsevier, Amsterdam.
3. DAVIS, K. AND BLAKE, J. (1956) Social Structures and Fertility: An Analytic Framework. *Economic Development and Cultural Change,* 4.
4. BONGAART, J. AND POTTER, R.G. (1983) Fertility Biology and Behavior: An Analysis of the Proximate Determinants. New York: Academic Press.
5. _ AND MENKEN, J. (1983) the Supply of Children: An Empirical Essay, *in* Bulatao and Lee (Eds.). Determinants of Fertility in Developing Countries, Volume 1: Supply of and Demand for Children, New York: Academic Press.
6. BECKER, G.S. (1960) an Economic Analysis of Fertility. Demographic and Economic Change in Developing Countries, University National Bureau Conference Series No. 11, (Princeton, New Jersey, Princeton, University Press).
7. MINCER, J. (1963) Market Prices Opportunity Costs, and Income Effects, *in* Carl F. Christ and Others (eds.); Measurement in Economics, Stanford University Press.
8. SCHULTZ, T.P. (1980) An Econometric Interpretation of the Decline in Fertility in a Rapidly Developing Country; Consequences of Development and Family Planning *in* R.A. Easterlin (eds.) Population and Change in Developing Countries, Chicago: University of Chicago Press.
9. EASTERLIN, R.A. (1978) the Economics and Sociology of Fertility: A Synthesis. In Charles Tilly (eds), Historical Studies of Changing Fertility, Princeton: Princeton University Press.
10. POLLAK. R.S. AND WATCHER, N.L. (1980) Towards a More General Economic Model of Fertility Determinants: Endogenous Preferences and Natural Fertility, *in* Richard, A. Easterlin (eds.), Population and Economic Change in Developing Countries, Chicago: University of Chicago Press.
11. CRIMMINS. E.M. AND EASTERLIN, R.A. (1981) Analysis of WFS Data in a Socio-economic 'Synthesis' Framework. Paper presented at the Manila General Conference of the International Union for the Scientific Study of Population.
12. _and CRIMMINS, E.M. (1982) An Exploratory Study of the 'Synthesis Framework of Fertility Determination with World Fertility Survey Data. *World Fertility Survey Scientific Reports* No. 40.
13. AND CRIMMINS, E.M. (1985) The Fertility Revolution: A Supply Demand Analysis. Chicago: University of Chicago Press.

14. McHENRY, J.?. (1985) A Critique of the Easterlin Approach to Micro Level Fertility Analysis. Population Bulletin of the United Nations, No. 17, Department of International Economic and Social Affairs, New York: United Nations.

15. AHMED, B. (1987) Determinants of Contraceptive Use in Rural Bangladesh: The Demand tor Children, Supply of Children, and Costs of Fertility Regulation. *Demography.* 24(3).

16. COCHRANE, S.H. (1983).Effects of Education and Urbanization on Fertility,*in* Bulatao and Lee (eds.), Determinants of Fertility in Developing Countries, New York, Academic Press.

17. IRFAN, M. AND FAROOQ, G.M. (1983) An Investigation of Household Reproductive Behaviour in Pakistan, Islamabad. Pakistan Institute of Development Economics. (Studies in Population Labor Force and Migration: Report No. 4).

18. YOUSSEF, N. (1983) The interrelationship Between The Division of Laborin the Household, Women's Role and Their Impact on Fertility, *in* R. Anker *et al.* (ed.) Women's Roles and Population Trends in the Third World, Croom Helm: London.

APPENDIX 1

MODEL SPECIFICATION

The Easterlin and Crimmin's 'Synthesis Framework' served as the conceptional framework for National Academy of Science Study for the fertility determinants in the developing countries (See Bulatao and Lee, eds., 1983). Richard Easterlin and Eileen Crimmins and other have applied this framework on data sets from other developing countries, see for example Crimmins and Easterlin (1981). Easterlin and Crimmins (1982; 1985),.and Ahmed, B. (1.987). Recently, Ahmed, (1987) modified this framework and has applied to discern the influences of Demand for Children, Supply of Children and Regulation Costs on current and future intended use of fertility regulations, andThiVha~s'beeh adopleolbr this study. Empirically and~EC Framework suggests that the deliberate use. of fertility regulations could be accounted for by variation in the 'motivations', (Cn-cd), to use fertility regulations and by variations in the montetary and psychological cost of these regulations, (RC}..

Since, USE has been a dichotomans variable (Use and No-Use) therefore, to determine the factors affecting the probability of use (Current-Use; Ever-Used; and Future-Intended-USE) of deliberate fertility regulations, following specification was adopted. Logit Estimation Technique was used to estimate the log-odds of use fertility regulations:

$$U = \beta + \beta_2 (Cn\text{-}CD + \beta_2 RC + e\ldots \quad (1)$$

WHERE

U= Current/Ever/Future Intended Use of Fertility Regulations; (Use or No Use);

Cn= Potential Supply of Children in the Absence of Fertility Regulations;

Cd = Demand for Children;

RC - Cost of Fertility Regulations and $\beta_1 > O$; $\beta_2 < O$

On, while being unobservable, and its direct estimation produces biased estimates (Ahmed, 1987), could be replaced by the following function:

$$Cn = O< 0 + \sum \alpha_1 \times_1 + \mu_1 \quad (2)$$

Where Xi is a vector of proximate determinants of fertility other than fertility regulations. Substituting eq (2) into eq (!) yields:

$$U = \beta o + \beta_1 (\alpha o + \sum \alpha_1 \times_1 + \mu_1 - cd) + \beta_2 RC + e \quad (3)$$

Or

$$U = To + \sum \S\ 1\times 1 - \pi Cd + \theta RC + e \quad (4)$$

Thus, the use of fertility regulations U, becomes a direct function of variables representing the supply of children (proximate-determinants), Xi, Demand for Children, Cd, and Cost of Fertility regulation, RC. It has been hypothesized that expected probability of use of fertility regulations by a continuously married fecund woman would be higher:

1. the longer her duration of marriage (§1 > O)
2. the shorter her first birth interval (§2 < O)
3. the shorter are her last closed birth interval and duration of breast-feeding practice and consequent postpartum amenorrhea (§**3** < O; §4 < O)
4. the less are her physiological problems of reproduction, as proxies by the rate of foetal wastage (§5 < **o)**
5. the tower rate of infant and child mortality (§6 < o)
6. the lower number of desired children (π < o)
7. the higher her knowledge of fertility regulations (θ > o)
8.

APPENDIX II

MEAN AND STANDARD DEVIATION OF VARIABLES USED IN THE ANALYSIS (Woman with Two or More Children)

Variables	Units	Current Users		Ever Used		Intended Use	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
Use of Fertility Control	0-0)	0.07	025	0.09	026	0.27	0.45
SUPPLY OF CHILDREN							
OURMARY	(Years)	16.00	7.80	16.6	8.2	15.1	7.90
FBI	(Months)	30.60	27.60	31.0	27.8	312	28.1
LCBI	(Months)	34.40	19.70.	35,1	20.S	345	20.1
MOBF	(Months)	14.50	620	14.7	8.2	14.5	82
PREGWAST	(Ratio)	0.03	0.09	0.03	0.09	-003	0.09
IMR	(Ratio)	0.16	020	0.17	0.21	0.17	021
COST OF FERTILITY REGULATIONS							
KNOWN	(*)	0.003	0.058	0.003	0.654	0.0001	0.0001
DEMAND FOR CHILDREN							
DFS (0-2)	0-0)	0.04	0.19	0.04	0.20	0.03	0.17
DFS (3-4)	0-0)	0.42	0.49	0.43	0.50	0.40	0.49
DFS (5*)	(1.0)	0.38	0.49	0.37	0.48	0.39	0.48
DFS fatalistic Answers	0-0)	0.16	037	0.16	0.37	0.18	0.38
SOCIO-ECONOMIC STATUS							
Wife's Education	(Years)	0.93	2.70	0.96	2.7	0.72	2.3
Husband's Education	(Years)	348	4.55	3.44	4.55	1.39	1.75
WIFE'S WORK STATUS							
Farm Workers	0 0)	0.03	0.17	0.02	0.21	0.02	0.22
Non-Farm Workers	(1.0)	0.19	0.14	0.08	0.17	0.09	021
Never Worked	0-0)	0.78	050	0.89	0.50	0.89	0.50
Urban Residence	0-0)	0.40	0.49	0.39	0.49	0.37	0.48
HUSBAND'S STATUS WORK							
Farmer	(1.0)	0.29	0.46	0.29	0.49	0.31	0.49
Agri-Workers	(1.0)	0.06	224	005	0.21	0.06	022
Unskilled Worker	(1-0)	0.002	0.04	0.002	0.04	-0.002	0.04
No Work	(1.0)	0.19	0.40	0.03	0.40	0.03	040
Others	(1.0)	0.46	0.49	0.61	0.50	0.30	050
REGIONAL DUMMIES							
Panjabi	(1.0)	0.60	0.49	0.61	0.49	0.60	0.49
Pa than	(1.0)	0.11	0.32	0.12	0.31	0.12	0.31
Balochi	(1.0)	0.05	022	0.05	0.22	-0.05	021
Sindhi	(1.0)	0.24	0.49	023	0.49	0.24	0.49
N		5002		5972		5447	

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FAMILY WELFARE PROGRAMMES IN INDIA WITH SPECIAL REFERENCE TO NGO'S COLLABORATION

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ABSTRACT

This study after going through the various approaches which have been adopted by the Government of India from time to time, to control the ever increasing population, suggests the formation of an Apex body VAFAH (Voluntary Action for Family Welfare and Health) with regional branches throughout the country. It will deal Withvoluntarysector for training, funding'monitoring, IEC activity, coordination and other related activities. International organisations like, USAID, World Bank and UNFPA would also be helpful in establishing such a body and implementing the programme through it. it further envisages the involvement of the community, the government and non-governmental agencies to complement and supplement each other to achieve population stabilisation and mother and child objectives.

According to the 1990-91 censuses, India's population is 843.93 million - a substantial rise from 342 million in 1947 and 684 million in 1981. We will have crossed the mark of a thousand million by the turn of twentieth century and would double in the next 35 years. The population in Indja has been increasing at a rate of 16 million a year, 69,120 per day. Forty-eight birth's fare taking place every minute. How much more can our country support? Within 2.4 per cent of the world area, our country has been supporting 16 per cent of the world population. The area will remain the same but the population will keep on increasing. To make any dent in the world's population, the scenario in; India is very important.

The Government of India was the first to recognise the problem and launched the family planning programme in 1951. The clinical approach was substituted by an extension approach and later with a welfare approach with the integration of mother and child health. The importance of female age of marriage, female literacy and status, infant mortality rate and social and cultural factors got integrated in a developmental approach which was adopted. A vast network of rural health

services with a sub-centre for 5000 population and a complete referral system was set-up throughout the country. However, the growth rate has only recently started coming down. Though the birth rate fell from 45.2 percent in 1941 to 30.6 per cent in 1989, the death rate fell at agreater pace *i.e.* 31.2 percent in 1941 to 10.3 per cent in 1989.

In 1983, the Government of India announced the National Health Policy which aimed at achieving a growth rate of 1,2 per cent along with a birth rate of 21 and

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death rate of 9 by 2000 A.D. Maternal mortality of two thousand live births and infant mortality rate of less than 60 per thousand live births was envisaged. The immunisation campaign was taken up on a mission basis as many diseases were vaccine preventable. Jhe causes of infant and child mortality have been given in the following table:

Cause	Infant Mortality	Child Mortality
Prematurity	**43.9%**	-
Respiratory Infections	**16.6%**	**25%**
Diarrhoea	**10.0%**	**28%**
Cord Infections	**6.9%**	-
Birth Injury	**2.0%**	-
Congenital Malformation	**2.3%**	-
Others	**18.3%**	-

With the immunisation mission,' the steadily increasing coverage levels achieved and the impact on incidence of poliomyelitis have been shown in Figure 1 and 2.

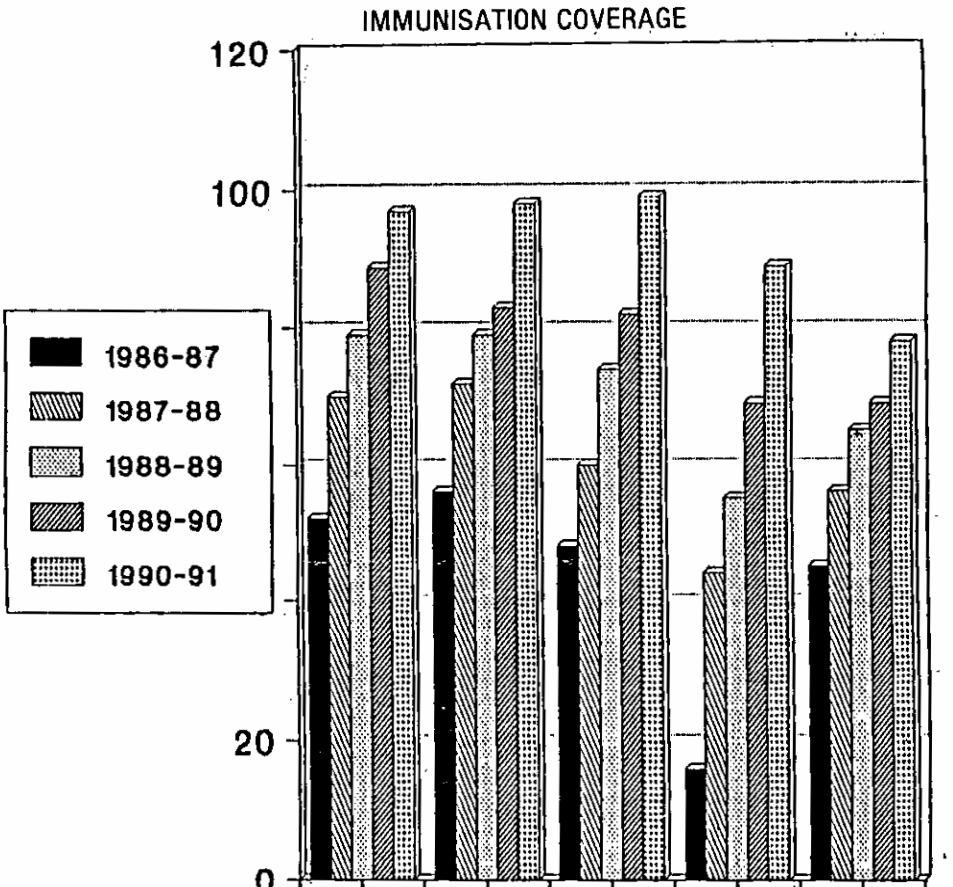
Encouraged with the performance of this programme, it is now being expanded in to a child survival and safe motherhood package with following components.

For young children (below 3 years)

- Newborn care
- Primary immunisation by 12 months
- Administration of Vitamin A*
- Pneumonia therapy; and
- Control of diarrhoeal diseases.

For mothers (pregnant women)

- Antenatal care
- Immunisation against tetanus
- Anaemia control during pregnancy
- Screening and referral of high risk cases, care at birth, and promoting spacing and timing of births
- Birth through trained health attendant.

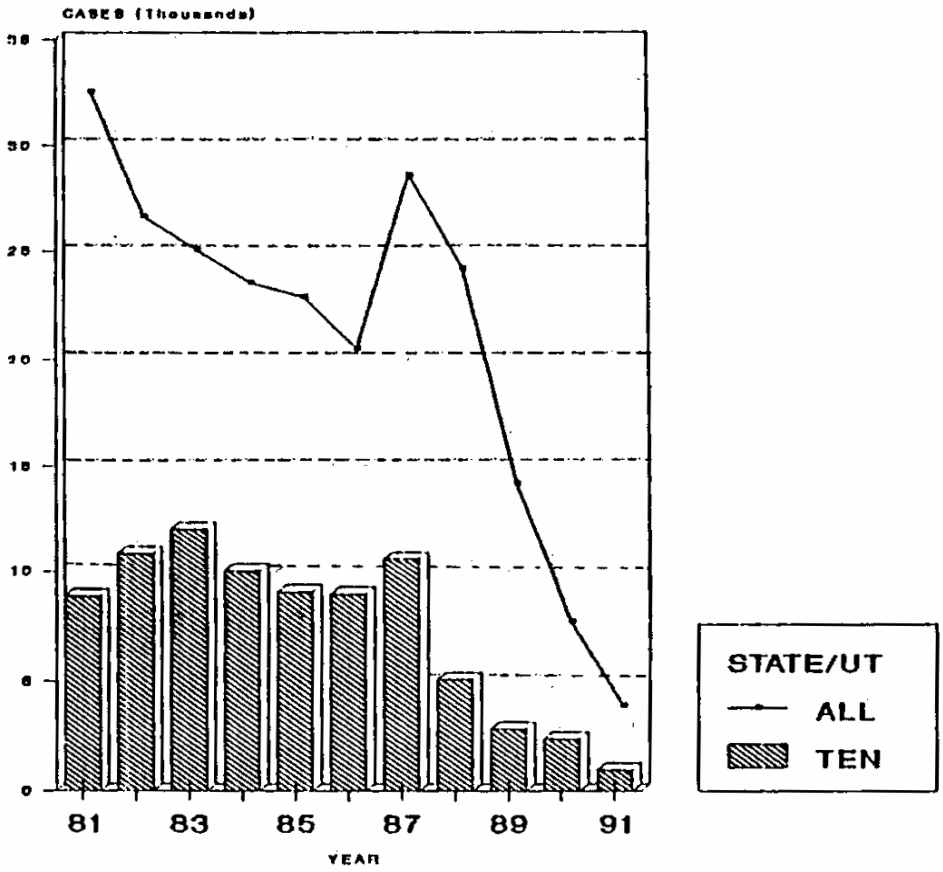


	BCG	DPT	OPV	MSL	TT(PW)
1986-87	52	56	48	16	45
1987-88	70	72	60	44	56
1988-89	79	79	74	55	65
1989-90	89	83	82	69	69
1990-91	97	98	99	89	78

FIGURE 1

IMPACT OF THE IMMUNISATION PROGRAMME IS ALREADY EVIDENT ON THE INCIDENCE OF THE TARGET DISEASES

POLIOMYELITIS: INDIA



1991:PROJECTED FIGURES

FIGURE 2

The goals for 1990 and 2000 A.D. that were set are as follows:

Indicators	Physical goals 1990	2000
Immunisation status (% coverage)		
- T.T. Jor pregnant women	100	100
- DPT infants -	85	100
- Polio infants	85	100
- BCG infants	85	100
- Measles infants	85	100
Incidence of blindness (%)	07	0.3
Deaths due to dehydration due to diarrhoea (reduction %)	75	95
Deaths due to:		
- Respiratory diseases (reduction %)	75	95
- Pregnant mothers receiving antenatal care (%)	60-75	100
- Deliveries by trained birth attendants (%)	80	100
- Effective couple protection rate {%)	42	60

Except immunisation status and couple protection rate, the programme has not yet achieved most of other goals. Perhaps, one of the reasons has been that though the non-governmental sector has participated, it remained largely a government's programme. The involvement of voluntary agencies has gone a long way in making the immunisation programme a success.

The Central Council of Health and Family Welfare headed by the Health Minister and the Planning Commission stressed on involving the non-governmental sector more in order to make family welfare a people's programme.

The Government gave a thrust and funded the non-governmental sector through Public Sector Undertakings, Organised Sector and Voluntary Sector. In the VII Plan, *i.e.*, 1985-86 to 1989-90, the programme was also implemented through organisations such as:

Railways	Rs.132.0 million
Posts and Telegraph	Rs.2.0 million
Defence	Rs.82.0 million
Public Sector Undertakings	Rs.1.3 million
Others	Rs.1.7 million

These kinds of organisations generally have a large number of employees. The following organised sector projects were also undertaken and funded during the VII Plan:,

		Amount (Rs. in millions)
1.	**All India Organisation of Employers**	**1.5**
2.	**Employers' Federation of India**	**1.5**
3.	**Family Welfare Education for Organised Sector Workers through Maharashtra Labour Welfare Board**	**6.3**
4.	**Central Board Workers Education**	**2.5**
5.	**National Co-op. Union o(India**	**3.9**
6.	**Comprehensive Family Welfare Education Programme through Andhra Pradesh State Labour Department**	**6.7**
7.	**Employees' State Insurance Corporation**	**8.7**
	Total	**31.1**

This was only an illustrative and not exhaustive list. Slowly.the trend has been to involve cooperatives and semi-organised sectors such as:

	Project Cost (Rs. in millions)
Working Women	19.530
Tea Planters	18.230
Beedi Workers	44.100
Tribal Population	23.100
Milk.Producers	4.700
	109.660

These schemes have been implemented from 1990-91 for a period of 4-5 years at an outlay of Rs.110 million. Some large industrialists have also taken up this challenge. Tata Iron and Steel Company has not only covered its own employees and achieved the target set for 2000 A.D. but also neighbouring areas and villages.

For voluntary agencies, the funding was through the following schemes;

		Amount fas. in million)
1.	SCOVA (Standing Committee on Voluntary Action)	2.9
2.	PLMP (Performance Linked Model Project)	
3.	Innovative Schemes (Vllth Plan Period)	43.3
4.	Private Voluntary Organisations for Health (PVOH) (Phase 1) 31 Organisations 1982-91	1338.00

The Private Voluntary Organisations for Health (PVOH) Schemes were larger and for 5 years while the Standing Committee on Voluntary Action (SCOVA), Performance Linked Model Project (PLMP) and Innovative Schemes were shorter and for a period of one year. The PVOH Schemes were appraised in the field before they were sanctioned. They have a mid-term and final evaluation.

The problems faced by the voluntary sector as per World Bank report have been listed as under:

- Core funding, continuity of funding.
- Inadequate information flows.
- Inadequate technical and managerial expertise or appropriate advice.
- Procedural delays and complexity in processing governmental fundings.
- Inadequate knowledge of governmental procedures and a forum to settle disputes.
- Absence of effective interacting facilities amongst NGOs.
- Lack of effective monitoring.
- Lack of popular participation at the early stages of project formulation.
- Inadequacies in the legal framework (Registration - cumbersome and restrictive, accountability to the beneficiaries).
- Absence of clearly articulated and consistant government policy,

The steps taken in the last few months by us are:

1. Dissemination of information of the schemes through print media and electronic media.
2. One officer identified as Nodal Officer in each State to deal with voluntary sector.

3. The recommendation of the State Government taken for granted if no reply .is received within 12 weeks.
4. Training being organised for the voluntary sector in one governmental and one non-governmental institute in each State for grassroof organisations.

   - Project formulation
   - Monitoring
   - Financial Management
   - Sustainability.

5. Elected bodies e.g. Panchayats, Zila Parishads, Municipal Corporations are attempted to be involved.
6. Study teams from States not doing so well in community participation in Maternal Health and Family.Welfare *e.g.* Bihar and Uttar Pradesh being sent to States such as Tamil Nadu doing better in this activity.
7. Identification of Organisations who will further identify, assist and propose funding of grassroot.level organisations:

   - Family Planning Association of India, Bombay.
   - Child in Need Institute, Daulatpur, West Bengal.
   - Centre for Labour Education and Social Research, New Delhi.
   - Gandhigram Institute of Rural Health and Family Welfare Trust, Tamil Nadu.

8. Delegation of sanctioning powers at regional level.
9. Conferences/meetings have been organised at a regional level at the following places:

   Northern States

   (Himachal Pradesh, Punjab, Haryana, Chandigarh, Jammu and Kashmir) - Shimla.

   Southern States

   (Tamil Nadu, Kerala, Andhra Pradesh and Karnataka) - Madras.

   Central States

   (Uttar Pradesh, Madhya Pradesh, Orissa and Bihar) - Patna'

   Eastern States

   (West Bengal, Assam, Mizoram and Nagaland) - Calcutta

   Western States

   (Maharashtra, Gujarat, Rajasthan'and Goa) - Goa

These provided a forum for interactive participation and understanding with each other.

It has been proposed to create an Apex body_- VAFA H (Voluntary Action for Family Wejfare and Health) with regional branches throughout the country which will deal_ with the voluntary sector for training, funding, monitoring, IEC activity coordination, and any other related activity, it will have the autonomy and flexibility. The Governing Council will consist of representatives from the recognised voluntary organisations and the governmental departments and agencies.

International agencies such as World Bank, USAlD and UNFP A would be happy to assist in the setting up of this body and implementation of the programme through it. Attempts should also be made to involve the community through new schemes that have been introduced such as Mahila Swasthya Sangh and Link Workers. These efforts would be specially important as almost 40 per cent of our country has not yet been covered by any mass media. Mother and child health and family planning involves very intimate personal matters and are best conveyed by relatives and friends within the community themselves. A system has to be worked out to make these individuals accountable to the beneficiaries and it can perhaps be best done by knowledge and vigilance of the beneficiaries. Monitoring should be more of an interactive sharing and constant liaison with the implementing NGO. It would be providing them with proper and effective guidance for the implementation of the project. The Government and non-governmental agencies should complement and supplement each other to achieve population stabilisation and mother and child health objectives.

Lkkjk'k

प्रस्तुत अध्ययन में तेजी से बढती जनसंख्या के बारे में भारत सरकार द्वारा समय–समय पर किए गए विभिन्न प्रयासों पर सोच–विचार के पश्चात परिवार कल्याण एवं स्वास्थ्य हेतु स्वैच्छिक कार्यवाही के लिए सारे देश में क्षेत्रीय शाखाओं सहित एक शीर्शस्थ संस्था बनाये जाने का सुझाव दिया गया है। इस संस्था का कार्यक्षेत्र स्वैच्छिक क्षेत्र में आवश्यक प्रशिक्षण, वित्तीय–व्यवस्था, निदेशन, सूचना, शिक्षा एवं संचार कार्यकलाप, तालमेल और अन्य संबंधित कार्य करना होगा। यू.एस.ए.आइ.डी. विश्व बैंक और यू.एन.एफ.पी.ए. जैसी अंतराश्ट्रीय संस्थाएं भी इस शीर्शस्थ संस्था भी स्थापना और इसके द्वारा कार्यक्रम के क्रियान्वयन में पूरी तरह सहायक सिद्ध होंगी। जनसंख्या–नियन्त्रण तथा मातृ एवं शिशु स्वास्थ्य लक्ष्यों को प्राप्त करने के लिए समुदाय, सरकार और गैर–सरकारी संस्थाओं को शामिल किए जाने और इनके द्वारा एक–दूसरे के साथ मिल–जुल कर करने पर अधिक जोर दिया गया है।

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PERIMARITAL COUNSELLING ON FAMILY PLANNING

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ABSTRACT

Population problem needs to be tackled on 'war footing' by innovative approaches. The newly married young adolescent couples escape the attention of health workers to endanger themselves with early child birth. The health risks associated with teenage pregnancy are not only to the mother but also to the baby. A strategy of perimarital counselling was adopted through the interns doing rural internship in Pune, Satara and Nagar districts .of Maharashtra.

Information about reproductive life was collected by home-visits on a pretested fifoforma. In all 269 young couples were contacted. About 59 wives and 57 husbands had obtained family planning advice from the health workers and 70 (26.6 per cent) couples were already using contraceptives. A total of 99 additional couples adopted various methods of contraception, as a result of education given by the interns. The results were encouraging and indicated a possibility of enhancing acceptance of family planning by young couples for the postponement of first pregnancy. Identification of newly married couples and distribution of contraceptives on monthly basis can be planned during routine home-visits of the health workers - male and female. This will not only boost up the use of temporary methods of contraception but also will motivate the couples to accept small family norm.

Population explosion faced by our country is one of the most important problems to be tackled on priority basis. Emphasis has so far been given on permanent methods of contraception among higher parity groups. This has resulted in fruitless sterilisations with very little impact on population growth, Little importance has so far been given to temporary methods, especially for newly married couples. In addition, teenage pregnancy has always been associated with high maternal and perinatal mortality1. Mean.age of marriage in rural Maharashtra has been much below 18 years. It has been observed that the newly married young adolescent couples start reproducing despite the dangers associated with teenage pregnancy.

It was, therefore, thought that it will be of value to find out knowledge, attitude

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and practice of these newly married couples in the field of reproduction behaviour and family planning in order to plan a strategy for counselling these couples.

MATERIALS AND METHOD

Interns during their posting at various primary health centres and at Rural Health Training Centre, Sirur were asked to enlist all the couples married in two calendar years 1989-90.

A pretested questionnaire was qiven to the interns after imoartina suitable training for filling them up. Interns were asked to give advice regarding family planning to these newly married couples immediately after collecting the required information. A follow-up visit was paid after two months to find out the compliance of the family planning advice given to individual couples. Reasons for not following the advice were also found out in case of non-acceptors.

RESULTS

Interns from 14 Primary Health Centres in Pune, Satara and Nagar districts identified a total of 269 couples married during the calendar year 1989 and 1990. Out of 269 couples, 224 (83.3 per cent) revealed that the decision about the age suitable for marriage was taken by their parents.

It could be seen from Table 1 and 2 that age at marriage increased with the higher education of both males and females. The mean age at marriage was 17 years with S.D. of 1.5 years for females whereas it was 21.3 years with S.D. of 1.7 years for men. About 211 (78.4 per cent) girls got married below the age of 18 years, of whom 13 (4.8 per cent) were belowthe age of 15 years. The bride and bridegroom knew each other before marriage in 55 (20 per cent) instances only. When enquiry about optimum age for marriage was made, 138 (51 per cent) girls thought that early marriages below the age of-18 years were desirable. Whereas majority of boys thought that they should get married after the age of 18 years.

About 140 (42 per cent) brides and 23 (8.5 per gent) bridegrooms did not have any idea about sexual relationship between husband and wife. The main source of information about sex life was from friends in 52/129 (40 per cent) in case of girts and 160/246 (65 per cent) in case of boys. Only 5 girls and 25 boys knew about it by reading literature. 41 /269 (15 percent) girls and 3 (1 per cent) boys did not know that conception can occur as a result of a sexual intercourse. 86 (32 per cent) girls and 31 (11.5 per cent) boys were totally unaware of any methods of family planning at the time of interview. The method of contraception and the knowledge about its use has been given in Table 3.

Attitude of couples about desirable number of children revealed that 147 (54.7 per cent) couples desired two child families and only 7 (2.6 per cent) couples's desired one child family. There were no couples desirous of more than 4 children as has been given in Table 4.

Girls and boys who desired to have the first baby within a year of marriage were 124 (46 per cent) and 112 (41 per cent) respectively. Only 36 (13.4 per cent) wives

TABLE 1
EDUCATION AND MEAN AGE AT MARRIAGE
OF WIFE

Education	Mean Age (years):	S.D. (years)	Frequency
Illiterate	16.82	1.73	76
Primary	16.90	1.25	104
Secondary	17.09	1.27	62
College and above	18.5	0.55	6
Total	17	1.5	269

The difference In age were not statistically significant between any two groups.

TABLE 2

EDUCATION AND MEAN AGE AT MARRIAGE
OF HUSBAND

Education	Mean Age (years)	S.D. (years)	N
Illiterate	20.5	2.32	26
Primary	20.7	1.97	41
Secondary	21.3	1,52	138
Higher Secondary	21.4	1.74	27
College and above	23.1	1.135	31
Total	21.3	1.7	269

TABLE 3
KNOWLEDGE ABOUT FAMILY PLANNING AMONG
269 COUPLES

Knowledge ***About***	Wives		Husbands	
	Number	Percentage	Number	Percentage
Cu.T	157	58.4	94	34.9
O.C. ***Pills***	113	42.0	80	29.7
Nirodh (Condom)	58	21.6	217	60.7
Tubectomy	17	6.3	8	3.0
Vasectomy	9	3.3	14	5.2
Non-response	85	31.6	34	12.6

TABLE 4
ATTITUDE. OF COUPLES ABOUT
FAMILY SIZE-

Number of Children' Desired	Wives		Husbands	
	Number	Percentage	Number	Percentage
1	7	2.6	6	2.2
2	147	54.7	146	54.3
3	60	29.7	61	30.1
4	13	4.8	14	5.2
Not sure	22	8.2	22	B.2
Total	269	100	269	100

and 43 (16 per cent) husbands desired to postponementfor 2 years. Fifty-nine wives™ and 57 husbands had on their own, obtained family planning advice from the health workers. There were 70 (26 per cent) couples at the time of first contact by the interns who were already using contraceptives. Follow-up revealed that 99 (36.8 per cent) additional couples adopted various methods of contraception after they got Health education from the interns as has been shown in Table 5. There were 90 (30.5 per cent) couples who did not accept the family planningadvice for various reasons has been given in Table 6. The lapse of period between marriage and consummation has been given in Table 7.

DISCUSSION

The minimum age of marriage for females was raised to 18 years by the Government of India in 19782. Inspite of this," the mean age of marriage in rural Maharashtra was around 17 years and in present study about 78 per cent brides were below the age of 18 years. It thus appears that only legislative approach was not effective. The study reveals increase in the age of marriage with higher education (Table 1 and 2). It would take some time before the status of education has been attained to a level strong enough to bring the age of marriage for girls above the age of 18 years. The main aim in raising the age of marriage legally was to decrease the fertility and avoid adolescent pregnancies. Both can be achieved by perimarital education of the couples about family planning. It was observedthat only 92/269 couples (34.9 per cent) were covered by the routine health care services,-out of whom 70 {77.6 per cent) adopted contraception. Out of the remaining 199 couples 26 women were pregnant. Thus, 99 (57.2 per cent) additional couoles out of 173 could be motivated for the use of contraceptives. If all the marriages were to be registered and the efforts made, at the earliest opportunity to motivate the couples for use of family planning methods, a large proportion (62.8 per cent) of couples could thus be protected. The mean interval, between the date of marriage and its consummation was found to be/13 days. No efforts should be spared in the utilisation of this lapse period which seemed .very crucial for the postponement of the first pregnancy.

TABLE 5

ADOPTION OF.CONTRACEPTION AFTER HEALTH EDUCATION

	Couples Practising Before	Couples Adopting After Health Education
Nirodh	35	46
O.C. Pills	30	36
Cu.T	5*	17*
Total	70	99

*AH women using Cu.T as contraceptive were parity 1.

TABLE 6

MOST IMPORTANT REASONS ASSIGNED FOR NON-ACCEPTANCE OF FAMILY PLANNING ADVICE

Reasons	Number	Percentage
Already pregnant	**26**	**18.9**
Desirous of child	**34**	**37.8**
Do not accept family planning due to traditional beliefs	**7**	**73**
Fear about use of contraceptives	**5**	**5.5**
Left using due to discomfort or side effects	**2**	**22**
Non-acceptors without specifying any reasons	**25**	**27.8**
Total	**99**	**100.0**

TABLE 7
TIME BETWEEN MARRIAGE AND ITS CONSUMMATION

Time Interval	Number	Percentage
Immediately	52	19.33
1 week	76	28.25
2 week	49	18.22
3 week	5	186
4 week	0	-
1 month to 2 months	34	12.64
More than 2 months	26	10.41
Not mentioned	25	929
Total	269	100.0

Majority of marriages in the Indian community are still arranged ones. Obtaining information about the proposed dates of marriages therefore, was not difficult for the local health workers like village health guides. Anganwadi workers, traditional birth attendants, male and female health workers, etc. The counseling about family planning can at that time be planned by the workers. The most commonly used conventional contraceptives were condom and oral pills which could be made available to the bridegroom or the bride before the time of marriage or soon after the marriage is over. This should be taken as a planned activity of the primary health centers. This will not only prevent adolescent pregnancy and postpone the first pregnancy but also will have a favorable impact on the reduction in maternal, prenatal and early childhood mortality, as teenage pregnancy has been known to be a significant health risk for both, to the mother and the child'. A monthly visit by the health worker to the family for the distribution of contraceptives could also be planned and utilized for distribution of iron and folic acid tablets to the newly married women, so as to improve their nutritional status and prepare the woman for motherhood at right time and further to motivate her to accept small family norm.

A need to impart sex and population education for the adolescent girls and boys was felt as there exists a lot of ignorance about the sexual behaviour and the use of contraceptives has been seen from this study and as well as from other studies3-6.

Sex and population education could be imparted to teenage population, as a curricular activity in the secondary schools and non-formal education for the school, dropouts and the illiterate youth. It will favourably influence the behaviour of the coming generations against early marriages and.adolescent pregnancies.

Lkkjk'k

जनसंख्या–समस्या का समाधान युद्ध स्तर पर प्रवर्तक अभिगमों द्वारा ढूंढ़े जाने की आवश्यकता को अनदेखा नही किया जा सकता है। स्वास्थ्य कार्यकर्ताओं की नजर से बचकर नव–विवाहित युवा वयस्क स्वयं को शीघ्र माता–पिता बन जाने के खतरे में डाल लेते है। 13–19 वर्ष की आयु में गर्भ ठहरने से न केवल मां के लिए बल्कि बच्चे के लिए भी स्वास्थ्य की दृष्टि से जोखिम उठाने वाली स्थिति उत्पन्न हो जाती है। महाराष्ट्र के पूना, सतारा और नागर जिलों के ग्रामीण क्षेत्र में प्रशिक्षण प्राप्त कर रहे प्रशिक्षणार्थियों द्वारा परिवार नियोजन पर विवाह संबंधी सलाह–मशविरा देने की रणनीति अपनाई गई।

पहले से ही टैस्ट किए जा चुके प्रोफार्मा पर घर–घर जाकर प्रजनन क्षमता के बारे में आवश्यक सूचना एकत्र की गई। लगभग 59 स्त्रियों और 57 पुरूषों द्वारा स्वास्थ्य कार्यकर्ताओं से परिवार नियोजन संबंधी सलाह–मशविरा किया गया 70(26.6%) दम्पती गर्भनिरोधकों का प्रयोग पहले से ही कर रहे थे। प्रशिक्षणार्थियों

द्वारा आवश्यक जानकारी दिए जाने के पश्चात 99 अतिरिक्त दम्पत्तियों द्वारा गर्भ रोकने के विभिन्न तौर–तरीके अपनाए गए। अधिकतर परिणाम उत्साहवर्धक थे और वे पहला बच्चा देर से करने के लिए परिवार नियोजन को स्वीकारने के लिए बढ़ावा देने की संभावनाओं को दर्शाने वाले थे। नव–विवाहित दम्पत्तियों को चुनने और महीने भर के लिए आवश्यकतानुसार गर्भ–निरोधकों का वितरण पुरूष एवं महिला स्वास्थ्य कार्यकर्ताओं द्वारा घर–घर जाने के समय नियोजित किया जा सकता था। इस प्रकार न केवल गर्भ रोकने के अस्थायी साधनों के प्रयोग को बढ़ावा मिलेगा बल्कि इसके साथ–साथ दम्पत्तियों को छोटे परिवार के आकार को स्वीकारने के लिए प्रेरित भी किया जा सकेगा।

REFERENCES

1. PRATINIDHI, ASH A SHROTRI, APARNA AND SHAH, USHA (1990} Risk of Teenage Pregnancy in a Rural Community of India. *Indian Journal of Maternal and Child Health,* 1(4}, October-December, p. 134-138.
2. THE CHILD MARRIAGE RESTRAIN ACT, GOVERNMENT OF INDIA, 1978.
3. KHORANA, A.B. (1976) *Journal of Family Welfare,* 22(3), p. 33-39.
4. BHATNAGAR, S.C. AND SATIA, J.K. (1976) *Journal of Family Welfare,* 23(1), p. 54-65.
5. SHRIVASTAVA. N.G. (1975) *Journal of Family Welfare,* 22(1), p. 54-63.
6. MURTHY, NIRMALA (1982) *Journal of Family Welfare,* 29(2).

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THE NATURE OF DEMAND FOR CONTRACEPTIVE SERVICE IMPLICATIONS FOR FAMILY PLANNING PROGRAMMES IN PAKISTAN

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ABSTRACT

Family planning programmes in Pakistan were generally accepted to have been unsuccessful partly owing to their overly supply-side orientation. The present study was designed to determine the nature of demand for the contraceptive services, in context of the existing socio-economic and cultural conditions.

The findings revealed that a majority of the women surveyed practiced contraception, even though they considered it against their religious beliefs. Demand for contraception also exists but only for those methods which leave the onus of responsibility on the males, e.g. condoms or those that women could employ without violating any norms, e.g. lactation, etc.

It was suggested that the programmes be targeted much more towards males because of critical decisions regarding reproduction, continue to be made by them.

Ever since the formal launching of the family planning programme in Pakistan, in 1965, contraceptive devices of all kinds have been made available almost free of cost through established delivery outlets as well as through those especially set-up for the purpose by the Population Welfare Division, while reliable statistics on actual contraceptive usage were lacking, the most recent estimates report only 10 per cent of eligible couples using' active contraception1. The crude birth rate was 41.7 per 1000 and the population growth rate has shown hardly any decline over the preceding twenty two years2.

Keeping the facts given in view, the expert opinion was quite unanimous in concluding-that family planning programmes in Pakistan have been less than successful3,4. The reasons for this failure were complex and numerous5. However, a major contributory factor has been the overly supply-side orientation of the official family planning programmes since their inception in 1965 (3:243).

Given the location of the family planning programme within the bureaucratic institutional, machinery of the Government the supply-side orientation was understandable. As with most top-down programmes, it was simply assumed that the Government's perception of population as a 'problem' was shared by all and that an undifferentiated demand for contraceptive services existed. Thus, all programme

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stragegies, concentrated on the delivery of services, ignoring peoples preferences and existing practices. This oversight was costly as the delivered services proved to be largely unacceptable in the existing social and cultural environment and were consequently not well received by the majority of the people at which they were targeted. In the conservative environment of Pakistan, religious values and beliefs play an important role in determining actions and in influencing decisions in all spheres of life. It was not very much surprising that this influence extends to fertility and reproductive behavior of people as well.

The present paper has been an attempt to uncover some of the aspects of demand for contraceptive services. Because the focus of the study was the characteristics of demand, as affected by religious beliefs, the study was conducted in an urban area, representative of middle to lower-middle income groups. In such a setting, it was expected that the contraceptive usage would be much higher than the national average and also the social groups would be amongst the most conservative. Here, the results of a small pilot study have been presented in which the contraceptive practices and preferences, of Muslim Pakistani women were elicited and analyzed in the context of their religious beliefs and values. Based on these results, recommendations were made for more appropriate family planning programmes.

METHODOLOGY

The study was conducted in Karachi, the largest city in Pakistan with a population between 6 to 7 million people1. Karachi has been a rapidly growing city with a population growth rate of 6 per cent per annum which is twice the national average1. The city offers all categories of health delivery services from small one-room operations to large tertiary care centers. Family planning and contraceptive services were a part of this system.

Married female patients, attending a general medical clinic during the period October 1985 to January 1986 was included in this study. The criteria for selection stipulated that they be married women of child-bearing age with husbands currently alive and both partners living together. This excluded widowed, divorced, separated and unmarried women.

A total of **93** women fulfilled these criteria. Socio-demographic information was recorded pertaining to their age, religious background, education level, income of the family, husband's occupation, their own occupation and the family size. Specific questions, pertaining to their contraceptive practice and preference within the context of their religious beliefs were asked. A close-ended questionnaire was also used to elicit the above information.

RESULTS

Of the 93 respondents 95 per cent (88) were from middle to-lower-middleclass backgrounds, coming from families with white-collar jobs. The median family income was Rs.2500 per month with husbands working as clerks or self-employed in small businesses. The remaining 5 per cent classified their husbands or

themselves as laborers. All (100 per cent) identified themselves as practicing Muslims predominantly belonging to the *Sunni* sect.

About 72 per cent of the women felt that contraceptive practices were against their religious beliefs as has been given in Table 1. However, out of the same category 86.5 per cent of the women were practicing or had practiced active contraception ashes been depicted in Table 2. The use of the condoms was the most prevalent (58 per cent) method of contraception. Lactation was being consciously used as a viable contraceptive alternative by 18 per cent while 9 per cent had undergone tubal ligation after completing their desired family size. Thus, of the women who considered contraception contrary to their religious beliefs only 9 per. cent were not using or had not used any contraception whatsoever.

TABLE 1

VIEWS OF RESPONDENTS REGARDING CONTRACEPTION AND RELIGIOUS BELIEFS

	Number	Per cent
Against Beliefs	**67**	**72**
Not Against Beliefs	**14**	**15**
No Opinion	**12**	**13**
	93	**100**

TABLE 2
CONTRACEPTIVE PRACTICES OF WOMEN WHO THINK IT AGAINST THEIR RELIGIOUS BELIEFS

Type of Contraceptive	Number	Per cent
Condoms	**39**	**58**
Lactation	**12**	**18**
Sterilisation	**6**	**9**
IUCD	**1**	**2**
Pill	**0**	**0**
None	**9**	**13**
Total	**67**	**100**

DISCUSSION

In order to understand the influence of religious beliefs on fertility behavior, some familiarity with religious doctrine and prevailing attitudes towards It were required. Islamic religious laws regulate fertility behavior as follows. Sexual intercourse is permitted ten days after the first day of the menstrual cycle, so that it is

resumed each month close to the estimated time of ovulation, or the most fertile period of the cycle. Reproduction has a positive value. An upper limit has not been set on the number of offspring's and the faithful ones were encouraged to produce as many children as they can look after6, 7. Contraception has been generally prescribed. Coitus interrupts has been recommended without reservation. Less active methods from the male point of view such as the pill and the intrauterine contraceptive device (IUCD) were permitted in specific circumstances especially after the couple has already produced the desired number of children. Abortion and sterilization were prohibited except where the mother's health is at stake.

Although, none of the women in our sample admitted to strict adherence to religious codes, it has been found that the laws pertaining to the areas of reproductive activity were very influential in their lives. The majority of the women felt that Islam did not sanction the practice of contraception. At the same time 86 per cent of these women were actually practicing active contraception, with the use of the condom being the most common method even amongst the most conservative and religious. It was clear that the application of religious injunctions was much stricter in the case of women than.in the case of men. The condom was especially acceptable because the onus of responsibility for its use rests on the male. This absolves the women from the responsibility of active contraceptive practice and subconsciously makes them feel that they were not violating any religious or cultural norms. Another study conducted recently in a low-income area of Karachi also documents the condom being used by the 60 per cent of the eligible couples included in the study9. The population, though from a lower socio-economic bracket, shares a similar religious background.

None of the women in the present study were willing, to consider abortion as a possible solution to a unwanted pregnancy or contraceptive failure. This was again found to be consistent with the religious position, where an unwanted pregnancy was accepted as irremediable and reflective of divine will8. Lactation was cited as a contraceptive choice by 18 per cent of the women in the study sample. About 98 per cent of the women sampled, preferred lactation as a method of delaying subsequent pregnancy. This reflects the fact that lactation was the only method available to women which does not violate any religious norm.

Of the women who had a minimum of four children and had presumably completed their desired family size, all 6 (100 per cent) opted for a more permanent method *i.e.*, sterilization, as opposed to the IUCD or the pill. This major decision obviously was taken with the concurrence, of the husbands.

CONCLUSION

The results of a study designed to ascertain the nature of the demand for contraceptive services. While the results were not strictly general sable because of the limited sample, they do point to some significant and neglected aspects of the family planning programmes in Pakistan.

It was quite clear that at least in the socio-economic group represented in the sample, there was a demand for contraceptive services. However, the acceptability

and use of a particular method was affected by the dominant religious code, the women remaining within the bounds of the value system as far as possible. Critical decisions about fertility behavior were made largely by the males and the condom was the most prevalent method of contraception because it leaves the onus of contraception on the male.

In such a situation, the target of family planning programmes should be males and the dissemination of information should be focused much more clearly towards them. Policy planners should ensure programmes and services compatible with the target populations' preferences. Since, the effectiveness of condoms was close to 96-99 per cent as opposed to coitus interrupts or lactation alone, which were unreliable, the use of condoms should be encouraged10. Further, keeping in view the positive value of breast-feeding for infants and its benefit in delaying subsequent conception its practice should be encouraged amongst women. A programme, stressing these two aspects, would find greater acceptance amongst the target groups. It would also have a higher success in preventing pregnancies, ensure adequate spacing and be beneficial to the health of mothers and infants.

However, one finding of this study suggests that the record of the family planning programmes in Pakistan was much more mixed than has been considered hitherto. Both the results of this study and that of Mirza indicate high contraceptive usage in urban areas9. Thus family planning programmes could be judged to have successfully catered for this felt need. As a result, the spacing of the plannedfamily should have improved. But, as the results show, the 'planned' family size remains high. Family planning programmes have failed to motivate people to reduce their family size. In retrospect this 'failure' was only to be expected. As has been pointed out much earlier the desired family size depends on a host of material factors and family planning programmes alone, without complementary programmes to improve living standards and prospects of survival, could not have been expected to have an impact.

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पाकिस्तान में परिवार नियोजन कार्यक्रमों की आम स्वीकृति में कुछ हद तक असफलता उनके दोष–पूर्ण आपूर्ति–अभिविन्यास के कारण थी। वर्तमान सामाजिक–आर्थिक एवं सांस्कृतिक परिस्थितियों के संदर्भ में गर्भ निरोधक सेवा–सुविधाओं की मांग की प्रकृति के बारे में आवश्यक जानकारी प्राप्त करने के लिए प्रस्तुत अध्ययन की रूप–रेखा तैयार की गई है।

अध्ययन से प्राप्त निष्कर्षों से पता चलता है कि सर्वेक्षण हेतु चुनी गई अधिकांश महिलाओं द्वारा उनके अपने धार्मिक विश्वासों के खिलाफ समझे जाने पर भी गर्भ–निरोधक साधनों को अपनाया गया। पुरूषों द्वारा जिम्मेदारी उठाए जाने और प्रयोग किए जाने वाले निरोध अथवा महिलाओं द्वारा स्तनपान जैसे किन्हीं आदर्शों का

उल्लघंन किए बिना प्रयोग किए जा सकने वाले गर्भनिरोधकों की मांग तो अवश्य ही है। प्रस्तुत अध्ययन में बच्चे पैदा करने के बारे में निर्णय लेने जैसे नाजुक मामलों में पुरूषों की राय और मरजी अधिक चलने के कारण परिवार नियोजन कार्यक्रमों में उन्हें ही लक्ष्य बनाए जाने का सुझाव दिया गया है।

REFERENCES

1. PAKISTAN STATISTICAL YEAR BOOK (1985) Federal Bureau of Statistics, Government of Pakistan.
2. UNITED NATIONS (1986) Population and Vital Statistics Report 1986, Series A, XXXVIII (4). " :
3. ROBINSON, W.C. (1978) Family Planning in Pakistan, 1955-1977: A Review. *Pakistan Development Review.* 17.(2), p. 233-247.
4. ROBINSON, W.C. (1987) The New Beginning in Pakistan's Family Planning'Programme. *Pakistan Development Review,* 26:(1), p. 107-118.
5. ROBINSON, W.C, SHAH, M.A., SHAH, N.M. (1981) The Family Planning Programme in Pakistan: What Went Wrong. *International Family Planning Perspective.* 7:(3).
6. ABDUL-RAUF, M. (1977) the Islamic View of Women and the Family. *Speller,* New York,, p. 35.
7. A LI YUSUF, A. (1978) The *Holy Quran.* The Islamic Center, Washington, D.C., Surat Nise - Verse 35.
8. AL-GHAZALI, ABU HAMID (1958) II, Halibi Press, Cairo, Egypt, p. 39.
9. MIRZA, A. (1987) An Evaluation of the Status of Health in Children under the Age of 4 Years Living in Slums of Karachi. Office of Population and Nutrition, US AID, Pakistan Draft Report, May 15,1987.
10. CONTRACEPTIVE TECHNOLOGY - (1985), 11th Edition, Irvington Publishers, Inc., New York.

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THE ABILITY OF PARAMEDICAL FUNCTIONARIES AND ANGANWADI WORKERS TO PREPARE AND DEMONSTRATE SUGAR-SALT AND ORS SOLUTION TO BENEFICIARY MOTHERS

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ABSTRACT

A total of 59 paramedical functionaries and Anganwadi Workers working at~44 dispensaries, MCW/MC-FW Centers and **3** *ICDS Projects in Delhi, were asked to prepare and demonstrate sugar-salt and ORS solutions to the beneficiary mothers. The performance of all the categories of functionaries was unsatisfactory, and only 2 (3 per cent) could undertake the recommended steps for sugar-salt solution, 11 (19 per cent) for ORS solution, and 2 (3 per cent) for both. This study highlights the tack of skills in regard to sugar-salt and ORS solutions amongst these functionaries.*

According to the Population Reports (1980) the health workers' knowledge, skills and performance regarding preparation of ORS and sugar-salt solutions and explanations to family members regarding care of diarrhea children, must be taken into account while considering evaluation procedures for oral rehydration therapy (ORT) programmes'.

Several studies have been conducted to assess the above. Limited knowledge in regard to SSS/and ORS solution was found in pharmacists, medical and paramedical functionaries, Anganwadi Workers and registered medical practitioners, and Anganwadi Workers (in control district without intensive ORT campaign)2,3,4.

The present study was taken in Delhi during 1990-91 with the objective of evaluating methods of preparation and demonstration by different categories of functionaries, of sugar-salt solution (SSS) and oral rehydration salt (ORS) solution to the beneficiary mothers of children under 5 years. In Delhi, ORT programme was implemented three years back and all related activities like training and health education had been intensified since then.

METHODOLOGY

This observational study was a part of a larger study on oral rehydration therapy (ORT) conducted ih Delhi. Delhi has an estimated population of 94 lacs (1991 census). Multiple agencies like MCD, Delhi Administration, NDMC, CGHS, etc. provide health care to the community through hospitals, dispensaries, Maternity

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and Child Welfare (MCW) Centers, Maternity, Child and Family Welfare (MC-FW) Centers, etc. Thjs study could be carried out in 44 dispensaries and MCW/MC-FW Centers out of 51 such randomly sampled centers and 3 ICQS projects. One LHV/ANM of the health providing centers and five Anganwadi Workers (AWWs) at "each of the three sampled ICDS projects (total'59) were asked to prepare and demonstrate sugar-salt solution (SSS) and ORS solution to the beneficiary mothers using the materials provided. In case no mothers were available at the time of study, the same was demonstrated to the researcher himself in a way suitable for mothers. Checklists have been prepared in advance and published instructions were used during the study5,6. The data was tabulated manually and analyzed.

PREPARATION AND DEMONSTRATION OF SUGAR-SALT SOLUTION (SSiS)

From Table 1, it can be observed that 76 per cent of the total functionaries did not wash hands before commencing preparation of SSS or even mentioned its importance to mothers. The AWWs were more particular about washing hands as 60 per cent of them did not do so, compared to 80 per cent of LHVs and 83 per cent of ANMs.

TABLE 1

CRITICAL OBSERVATIONS DURING THE PREPARATION AND DEMONSTRATION OF SUGAR-SALT "SOLUTION BY FUNCTIONARIES TO MOTHERS

Category ot Functionary	Number and Percentage	OBSERVATIONS				
		Did not wash hands	Did not add correct amount of salt-	Did not taste the salt solution	Did not add the correct amount of sugar	Did not instruct mothers properly
LH.V.	15 (25%)	12 (80%)	-	9 (60%)	-	-
A.N.M.	29 (49%)	24 (83%)	7 (24%)	28 (97%)	8 (28%)	12 (41%)
Anganwadi Worker (AWW)	15(25%)	9(60%)	4 (27%)	14 (93%)	5 (33%)	9 (60%)
Overall for all categories	59 (100%)	45 (76%)	11 (19%)	51 (86%)	13 (22%)	21 (36%)

Nineteen per cent of the total functionaries did not add the correct amount of salt, being 24 per cent for ANMs and 27 per cent for AWWs respectively, whereas all LHVs performed this step correctly. Eighty-six per cent of the functionaries did not taste the prepared salt solution (to compare it to that of tears), being 60 per cent for LHVs, 97 per cent for ANMs and 93 per cent for AWWs specifically.

Incorrect amounts of sugar were added by 22 percent of the total functionaries, being 28 per cent for AN Ms and 33 per cent for AWWs, whereas all LHVs added the correct amounts. All LHVs instructed the mothers properly regarding the use of SSS,

whereas 41 "per cent of ANMs and 60 per cent of AWWs (overall 36 per cent for all categories) did not do so properly.

PREPARATION AND DEMONSTRATION OF ORS SOLUTION

It can be noticed from Table 2 that 76 per cent of the total functionaries did not wash hands before starting preparation of ORS or mentioned its importance to mothers. Category wise, the numbers and percentages were the same as in case of SSS.

TABLE 2

CRITICAL OBSERVATIONS DURING THE PREPARATION AND DEMONSTRATION OF ORS SOLUTION BY FUNCTIONARIES TO MOTHERS

Category of Functionary	Number of Percentage	OBSERVATIONS		
		Did not wash hands	Did not mix all of the ORS from 1 ORS packet In 1 litre of water	Did not instruct mothers properly
L.H.V.	15 (25%)	12 (80%)	2 (13%)	-
A.N.M.	29 (49%)	24 (83%)	8 (28%)	12 (41%)
Anganwadi Worker (AWW)	15 (25%)	9 (60%)	3 (20%)	9 (60%)
Overall for all categories	59 (100%)	45 (76%)	13 (22%)	21 (36%)

Overall 22 per cent of the functionaries did not mix all of the ORS from one packet completely in 1 liter of water, being 13 per cent for LHVs, 28 per cent for ANMs and 20 per cent for AWWs specifically.

Regarding instructions to mothers on the use of ORS solution, it was found that 36 percent of the total functionaries did not do so properly, being 41 per cent for ANMs and 60* per cent for AWWs specifically, whereas all LHVs instructed the mothers properly in this regard.

Only 2 functionaries (13 per cent of the total 59), both LHVs, could carry out all the steps properly in case of both SSS and ORS solution as has been shown in Table 3.

SSS was properly prepared and demonstrated by only 2 (3 per cent) of the total functionaries. Both were LHVs. No ANM or AWW could undertake the proper steps for preparation of the SSS or ORS solution.

Only 11 functionaries (19 per cent overall) could properly prepare and demonstrate ORS solution. These included 3 (20 per cent) LHVs, 4 (14 per cent) ANMs and 4 (27 per cent) AWWs.

TABLE 3
NUMBER OF FUNCTIONARIES PREPARING SSS AND ORS SOLUTION AS RECOMMENDED AND INSTRUCTING MOTHERS PROPERLY FOR THEIR USE

Solutions	Number of Functionaries'			
	LHV (15)	ANM (29)	AWW (15)	Overall (59)
Sugar-Salt Solution (SSS)	2 (13%)	-	-	2 (3%)
ORS solution	3 (20%)	4(14%)	4(27%)	11 (19%)
Both SSS and ORS solution (derived from 1 and 2)	2 (13%)	-	-	2 (3%)

DISCUSSION

It is evident from the study that most of the functionaries which were evaluated, performed unsatisfactorily regarding the preparation and demonstration of SSS and ORS solution. Even LHVs did not perform as well as expected, although they fared better than others.

The unsatisfactory level of performance of all the three categories in this study has been found consistent with similar studies conducted previously3,4. The lack of specific skills related to the preparation and demonstration of SSS and ORS solution amongst the various categories of functionaries has been highlighted in the study, and it may be useful to lay stress on these aspects during ORT training programmes.

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REFERENCES

1. ANONYMOUS (1980) Oral Rehydration Therapy (ORT) for Childhood Diarrhoea. *Population Reports Series,* 1(2) Nov.-Dec. 1980, p. L63.
2. WORKSHOP, ICDDR, B. (1981) Medical Education on Diarrhoeal Diseases and Related Subjects. *ICDDR,* 8. *Special Publication,* NO. 14, Dhaka, Bangladesh, 1981, p. 13.
3. JOSHI, S *Bt al.* (1987) Community Management of Diarrhoea, A KAP Study - Draft Report Indian" Institute of Health Management, Research, Jaipur, 1987, p. 7-8.
4. RAWAL, S. AND SADANA, R. (1989) Promotion of Oral Rehydration Therapy. *CARE India.* New Delhi, June 1989, p. 48-50. x
5. GOVERNMENT OF INDIA, MINISTRY OF HEALTH AND FAMILY WELFARE, New Delhi. Better Care during Diarrhoea, p. 10.
6. GOVERNMENT OF INDIA..Training of Doctors on Treatment of Diarrhoeal Diseases and Programme Management. National! nstitute of Cholera and Enteric Diseases, Calcutta, p. 29.

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MCH SERVICES IN ICDS AND NON-ICDS AREAS - A STUDY OF MOTHERS' KNOWLEDGE AND PRACTICES IN RESETTLEMENT COLONIES OF DELHI

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ABSTRACT

Health care cannot be achieved by health sector alone. For provision of health services in urban areas the government appreciates the need for a coordinated, organized, integrated, urban development programme which would include health services as an essential component. The infrastructure for providing MCH services in urban areas consists of MCH and Family Welfare Centers, hospitals and dispensaries run by the government, local bodies, voluntary organizations and private organizations and practitioners. To bring MCH services within easy reach of women and children, the infrastructure has been further extended, with the establishment of health posts under the urban revamping scheme with staffing pattern depending upon the population covered. MCH services have been further strengthened by maximizing their coordination with the Integrated Child Development Services Scheme in the social welfare sector.

Started in 1975, the ICDS scheme with its health services component, has fulfilled the aspirations of MCH care providers by itself becoming an important operational strategy for providing MCH services to the needy and will remain so in future. The same situation exists in the urban resettlement colonies and slums of Delhi, where there are at present 24 urban ICDS projects functioning. A study was conducted in two resettlement colonies of Delhi, one covered by an ICDS project and the other not covered by ICDS scheme to assess the knowledge and practices of mothers in the reproductive age group regarding maternal and child health services. The study was carried out during November 1990 to February 1991.

MATERIALS AND METHOD

The study was carried out in the Tilak Vihar ICDS project area where the project was started in 1986. Under this project, 34 Anganwadi areas with a total population of 34,985 were covered by the study. The non-ICDS area selected for the study was the Govindpuri Transit Camp area and the adjacent resettlement colony. The total population covered in the non-ICDS area was 17,587. The population living in both ICDS and non-ICDS areas were almost similar in demographic, literacy and socio

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economic characteristics. As regards health facilities, both the ICDS project areas had adequate government facilities. In the non-ICDS area, health facilities, though adequately available according to the population were not properly distributed. Private and voluntary health and family welfare service facilities were available in both the areas.

A total of 300 mothers in the ICDS area and 297 mothers in the non-ICDS area were interviewed personally, using a questionnaire designed separately for both the areas. The questions asked were quite comprehensive in all the aspects of maternal and child health related to the objectives of the study, In the ICDS area, specific questions regarding the ICDS programme were asked while conducting mothers' interview.

The method adopted for data collection *(i.e.* interview of mothers) was the 30 cluster technique. The 34 Anganwadi areas population was randomly clustered for the survey and 30 clusters were covered with a target to interview 10 mothers who had a child of the age group of 12 to 23 months, in each of the 30 clusters. In other words, during the household survey in each cluster, in any house where a child of 12-23 months age group was available, the mother of the child was interviewed personally with the predesigned questionnaire. In the non-ICDS area, the entire area selected for the study comprising 3604 households was divided into 37 groups of houses on a geographical pattern by dividing the area on the basis of lanes and inter-sections passing through the area to identify the clusters. The household survey was then conducted according to the 30 cluster sampling technique and 297 mothers were interviewed.

An assessment of the knowledge and practices of the mothers regarding various MCH services like TT immunization during pregnancy, Vitamin A solution for prevention of blindness; iron folic acid and ORS for children; antenatal, natal and postnatal services was made during the interview.

The mothers responses were also assessed for other information’s like the advice and guidance received from ICDS and MCH programme workers, health education received about MCH benefits and also about the place of delivery (institutional or home) chosen by them for the child birth and the assistance accepted from the trained persons for child birth and immunization of children.

FINDINGS

In the ICDS area, when assessed through direct questions, 60 per cent women were found to be aware of an ICDS project functioning in the area. About 73,30 per cent Of them were familiar with the local Anganwadi worker and 76.60 per cent visited the Anganwadi centre and approximately 73.00 per cent of them utilized the ICDS services either for themselves or for their children. About 70 per cent of them were also advised by the ICDS workers to visit the MCW centre for various services, out of which 60.00 per cent actually did so.

The other major findings of the mothers' interview^ oj in both ICDS and non-ICDS areas related to knowledge and practices of MCH services were as below.

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1. ***Knowledge of MCH Services***
   +ICDS - 98.00 per cent+ve; 2.00 per cent*ve
   Non-ICDS - 6.74 per cent+ve; 93.26 per cent -ver

2. ***A wanes about place of availability***
   ICDS - All respondents were aware.
   Non-ICDS - 3.30 per cent+ve; 96.70 per cent -ve.

3. ***Source of knowledge about MCH benefits***
   ICDS - 95.00 per cent directly from MCH and ICDS staff.
   Non-ICOS - 88 33 per cent from TV and Radio. Rest from direct contact with MCW centre staff.

4. ***Knowledge about different MCH benefits***
   ICDS • 72.00 per cent named immunization services; 30.00 per cent named antenatal services.
   Non-ICDS - 99.00 per cent could not name any.

5. ***Going to MCW Centre for antenatal check-up (Number of check-ups not counted)***
   ICDS - 93.00 per cent+ve, 7.00 per cent -ve.
   Non-ICDS - 47.00 per cent +ve; 53.00 per cent -ve.

6. ***Place of delivery chosen***
   ICDS - Institutional 40.00 per cent; Home 60.00 per cent.
   Non-ICDS - Institutional 43.43 per cent; Home 56.57 per cent.

7. ***Acceptance of assistance from trained persons for home delivery***
   ICDS - 93.32 per cent.
   Non-ICDS - 43.77 percent

8. ***Utilization of MCH services for children (for benefits excluding Immunization)***
   ICDS - 98.00 per cent+ve; 2.00 per cent -ve.
   Non-ICDS - Varied between 10-20.00 per cent for different services,

9. ***Immunization services for children***
   ICDS - 98.60+ve.
   Non-ICDS - 95.45 per cent+ve.

10. ***TT Immunization of pregnant women (Number of doses received)***
    a. **2 Doses: ICDS - 9333 per cent; Non-ICDS - 5320 per cent.**
    b. **1 Dose; (COS -1.33 per cent; Non-ICDS - 3.03 per cent.**
    c. **No injections: ICDS - 5.34 per cent Non-ICDS - 43.78 per cent.**
    d. **Alt doses together: ICDS - 94.60 per cent; Non-ICDS - 56.22 per cent.**

11. ***Source of knowledge regarding benefits of TT***
    ICDS - 60.00 per cent from ICDS and MCW staff; 35O0 per cent from TV and Radio.
    Non-ICDS - 94.00 per cent from TV and Radio; 60.00 per cent from MCW staff, social worker, etc.

12. ***a. Utilisation ot Vitamin A solution for children***
    ICDS - 93.00 per cent+ve; Non-ICDS -11.44 per cent *ve.

    b. Use of Iron Folic Acid for anaemia
    ICDS - 98.00 per cent+ve; Non-ICDS - 2222 per cent+ve.

    c. ***Knowledge of ORS***
    ICDS - 94.00 per cent+ve; Non-ICDS - 91.58 per cent+ve.

    d. Use of ORS
    ICDS - 97.30 per cent+ve; Non-ICDS - 90.90 per centtve.

13. ***Other observations,***

a. In the ICDS area 74.00 per cent mothers said they were advised and helped by the ICDS workers for MCH benefits.

b. In the non-ICDS area, approximately 80.00 per cent mothers visited a local voluntary organization for MCH benefits.

c. In the non-ICDS area only 4.00 per cent mothers said that the government MCW centre staff visited their area.

d. in 92.00 per cent of all items assessed through the mothers' interview, the knowledge, practices and utilization of MCH services were better in the ICDS area than the non-ICDS area.

DISCUSSION

As regards the extent of utilization of ICDS services by mothers in the ICDS project area it was observed that the percentage (73.00) utilizing ICDS benefits and their awareness about MCH services *via -a-vis* ICDS was quite high. However, most mothers utilized the benefits for their children. It was also observed that 70.00 per cent respondents had been advised by the Anganwadi worker for various MCH services while the remaining 30.00 percent did not receive any such advice, which was quite significant as about 20 per cent women said they did not know the Anganwadi workers.

The respondents in the ICDS area were aware of the availability of MCH services in their area and 98 per cent of them had adequate knowledge of different MCH services. Compared to this, in the non-ICDS area only 6.74 per cent women had knowledge of MCH and 3.30 per cent knew where these services were available. This could be attributed to the activities of ICDS programme in the area. Also that the ICDS workers' coordination with the health workers in the area was quite effective for imparting the knowledge of maternal and child health services and this has been amply proved by the fact that 95.00 per cent of respondents in the ICDS area named them as the source of their knowledge whereas 89.00 per cent of the non-ICDS area respondents had learnt about MCH from TV and Radio. A very small percentage of mothers (11.50 per cent) said their source was contact with MCW centre staff. The same was true in case"of Tetanus Toxoid Immunization as has been shown in the Table.

As regards antenatal, natal and postnatal care there was a notable difference in the two areas regarding pregnant women going for antenatal check-up. In the non-ICDS area only 47.00 per cent pregnant women received antenatal check-up while in the ICDS area 93.00 per cent women did so. This could be because of the fact that as already stated earlier, the health facilities were not within easy reach of the women in the non-ICDS area. This: may also be true for the acceptance of assistance of trained persons for home delivery. The proportion .of institutional to home deliveries were almost equal in both the areas indicating the general concern for the event of a child-birth. As regards immunization practices of the mothers for their children it was equal in both the areas. For the number of T.T. injections during pregnancy, the non-ICDS<area showed a lower acceptance than the ICDS mothers. The knowledge, and use of ORS in case oftfiarrhoeal diseases by the mothers was

found to be equal in both the areas. This may be attributed to the prioritization of health education regarding ORS'in1 recent years. For the benefits like Vitamin A solution for prevention of blindness and Iron Folic Acid for nutritional anemia, the knowledge and practices of the mothers in the non-ICDS area was found to be grossly deficient. The presence of health facilities and field practices of the health workers in coordination with ICDS played a major role in this regard in the ICDS area, which was found absent in the non-ICDS area.

SUMMARY AND CONCLUSION

A study was carried out in two resettlement colonies of Delhi, one of them covered by an ICDS project to assess the knowledge and practices of mothers regarding maternal and child health services. Three hundred mothers in the ICDS area and 297 mothers in the non-ICDS were interviewed with predesigned questions related to all the aspects of ICDS. and MCH. Analysis of data collected showed that in about 92.00 per cent of the items assessed, the mothers in the ICDS area were more knowledgeable and had positive attitudes and practice regarding the various MCH benefits. The joint strategies for delivery of MCH services with ICDS scheme played a definite and positive role in increasing the awareness of the mothers. In the non-ICDS area, because of lack of these services and lower level of coverage by the health functionaries this was very much lower.

As already inferred from the various evaluation studies of the ICDS scheme by other researchers in the past, and also observed by the present study that the ICDS scheme played a definite and positive role in enhancing the effective delivery of MCH services and further helped in raising the health status of the beneficiaries. For resettlement, colonies of Delhi too it-stands equally true.

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स्वास्थ्य सेवाओं के एक हिस्से के रूप में 1975 में शुरू की गई समेकित बाल विकास योजना ने स्वयं अपने–आप में एक रणनीति के रूप में जरूरत–मदों को मातृ एवं शिशु स्वास्थ्य परिचर्या सेवा–सुविधाएं उपलब्ध कराकर और भविश्य में भी इसी प्रकार चलते रह कर मातृ एवं शिशु स्वास्थ्य परिचर्या उपलब्धकर्ताओं की सभी लालसाओं को पूरा किया है। दिल्ली शहर की पुर्नवास बस्तियों और झुग्गी–झोपड़ियों में जहां आजकल 24 शहरी समेकित बाल विकास सेवा योजनाएं चलाई जा रही हैं वहां तो ऐसी ही स्थिति देखी गई है। दिल्ली शहर की दो पुर्नवास बस्तियों को अध्ययन के लिए चुना गया है जिनमें से एक बस्ती में समेकित बाल विकास योजना चलाई जा रही है और दूसरी बस्ती इस से वंचित है। प्रजनन क्षमता आयु वाली माताओं का मातृ एवं शिशु स्वास्थ्य सेवाओं के बारे में ज्ञान और उन्हें अपनाये जाने के बारे में यह अध्ययन किया गया था। प्रस्तुत अध्ययन नवम्बर 1990 से फरवरी 1991 के दौरान किया गया था।

REFERENCES

1. Research on ICDS: An Overview, 1,1989. *NIPCCD,* New Delhi.

2. Primary Health Care in India (1988) Ministry of Health and Family Welfare, Government of India.

3. Management Training Module for Medical Officers, *NIHFW,* New Delhi.

4. WHO: EPI Training Module for Med Level Managers.

5. Rftle of ICDS in the Acceptance of MCH Services in Resettlement Colonies of Delhi (1991) M.D. Thesis submitted to University of Delhi, *NIHFW,* New Delhi.

Health and Population
- Perspectives & Issues 14(3&4):142-148, 1991

GENETIC EPIDEMIOLOGY OF ESSENTIAL HYPERTENSION R.N.

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ABSTRACT

Patients suffering from essential hypertension were compared with patients suffering from non-hypertensive diseases in a *case control study on genetic epidemiology of essential hypertension, to identify various factors including genetic factors associated with the occurrence of essential hypertension. The results of the study showed that environmental factors like salt consumption, non-vegetarian diet and greater body mass, etc. along with genetic factors were significantly associated with the occurrence of essential hypertension. Further, the study also confirmed that essential hypertension is a multifactorial disorder and hereditary component is slightly greater than the environmental component.*

Essential hypertension has been a disease of multifactorial causation and a number of factors have been implicated with reasonable accuracy in its occurrence. Salt intake, type of diet, dietary fat, physical activity, mental stress, socio-economic status, alcohol consumption, smoking, etc. were some of the environmental factors which along with hereditary or genetic factors1 have specifically been implicated with hypertension. Considering the diverse and paradoxical effects of all the factors in the genesis of essential hypertension, it appears that the seeds of the disease were sown in very early life (genetically determined predisposition) but it manifests late in life by the modulating effect of the environmental factors.

The environmental factors have been found to be very deeply ingrained in our way of life and it may not always be possible to avoid exposure to those in all cases. But, for those individuals who have been identified to be genetically susceptible, it will be relatively easier to modify the environmental risk factors, fitting into their life styles. In this way, it will become possible to prevent and control essential hypertension. For paucity of adequate knowledge in this regard, no effective prevention of essential hypertension could be evolved so far, and action has been limited to curative remedies alone.

MATERIALS AND METHOD

The study was conducted in a major hospital of Delhi (Lok Nayak Jai Prakash Narain Hospital) and the study sample comprised 140 patients suffering from

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essential hypertension and treated in that hospital during the year 1989, either as indoor or outdoor patients. These were taken as cases and equal number of controls (140) were selected from patients suffering from non-hypertensive diseases and treated in the same hospital during the same period either as indoor or outdoor patients, matching age, sex, religions and ethnicity.

After collecting the relevant data of the cases and the controls from the hospital record department, their families were visited and further information was gathered. Interviewing the patients and their family members were as follows;

- All the information on various modifiable risk factors through a semi-structured schedule was collected.

- Detailed genealogical history of three generations of the patients (both cases and controls) by interviewing them with their relatives and cross-checking the information with the elderly members of the household wherever required. Specific information on birth order of the patients and the affected sibs along with the presence and nature of consanguinity were also collected.

The data so collected, were statistically analyzed to determine the presence and extent of association of various risk factors with the occurrence of essential hypertension. From the genealogical data, an attempt was also made to estimate the heritability of liability to essential hypertension through the Falconer-Model (1965);

RESULTS

Risk factors found to be associated with the occurrence of essential hypertension were as follows:

Type of Diet: In the present study, the difference in relationship between non-vegetarian and vegetarian diets and essential hypertension has been found to be statistically significant (chi-square of 6.9). The relative risk has been estimated to be 1.88. Similar observations were also made by other researchers', 2. Vegetarian diet has been found to lower blood pressure and non-vegetarian diet to rise. But it was not clear at this stage which component of the vegetarian diet was responsible for this lowering effect. Being high in fibers an polyunsaturated fat, vegetarian diet has obvious health benefits. However, it may not be acceptable to non-vegetarian hypertensives.

Salt Consumption: Innumerable studies have shown that higher salt consumption has a blood pressure raising affect. Modest reduction in dietary salt intake has been found to reduce blood pressure, In the present study, the relationship of salt consumption and essential hypertension has been found to be statistically significant (chi-square 4.44) and high salt consumers were found to be 2.02 times more likely to develop essential hypertension, than normal or low salt consumers. Thus, salt restriction 'was an useful adjunct in the management of hypertension and also proved to be a valuable tip for the vulnerable individuals.

Body Mass: Excessive body weight probably ranks as the most important of all the predisposing factors to hypertension. Obesity increases cardiac workload and

reduces exercise habits, both factors possibly contributing to hypertension. Losing weight is beneficial in lowering blood lipids, allowing greater physical activity and thus reducing blood pressure. In the present study, body mass has been found to be significantly associated with essential hypertension and the relative risk has been estimated to be 2.63. Similar observations were also made by other scholars who estimated that the ratio between overweight hypertensive to normal weight hypertensive was 3:12, 3, \5. Another researcher found the same to be as 5.16. Thus, reducing body weight and maintaining the body mass at the normal level of age, sex and height-was an important requirement for the prevention and control of hypertension as per findings of the present study.

Other environmental and social factors like socio-economic status, fat consumption pattern, smoking, and alcohol consumption were not found to be significantly associated with the occurrence of essential hypertension in the present study.

Genetic Factor. Hereditary factor has been an important co-determinant in the development of hypertension. Family aggregation of essential hypertension has been produced by the interaction of multiple genes with multiple environmental factors and this interaction occurs in a cumulative fashion. An individual, who inherits the right combination of these genes, passes beyond a threshold of risks at which point an environmental component determines whether and to what extent the individual gets clinically affected. For another member in the same family to express the same syndrome, the same or similar combination of genes must be inherited. Since, the first degree relatives, *i.e.* siblings and offspring of an individual, each share half of the person's gene, they are all at an increased risk of developing essential hypertension.

The findings of the present study revealed that first degree relatives affected by essential hypertension were higher among the cases 130 (9.07 per cent) rather than among the controls 25. (1.72 per cent). The relationship has been statistically significant, and also the relative risk has been found to be 5.73 (Table 1,2,3 and 4).

TABLE 1
INCIDENCE OF ESSENTIAL HYPERTENSION IN RELATIVES
OF 66 MALE CASES

	Brothers	Sons	Fathers	Sisters	Daughters	Mothers	Total
Affected	15	5	12	15	5	9	61
Studied	155	128	66	132	98	66	645
Percentage affected	9.67	3.90	16.18	11.36	5.1	13.63	9.45

TABLE 2
INCIDENCE OF ESSENTIAL HYPERTENSION IN RELATIVES OF 74 FEMALE CASES

	Brothers	Sons	Fathers	Sisters	Daughters	Mothers	Total
Affected	14	6	7	23	6	13	69
Studied	162	149	74	191	137	74	787
Percentage affected	8.64	4.02	9.45	12.04	4.37	17.56	8.76

TABLE 3
INCIDENCE Of ESSENTIAL HYPERTENSION IN 66 MALE CONTROLS

	Brothers	Sons	Fathers	Sisters	Daughters	Mothers	Total
Affected	3	2	2	2	2	1	12
Studied	162	133	66	129	102	66	658
Percentage affected	1.85	1.50	3.0	1.55	1.96	1.5	1.82

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TABLE 4
INCIDENCE OF ESSENTIAL HYPERTENSION IN 74 FEMALE CONTROLS

	Brothers	Sons	Fathers	Sisters	Daughters	Mothers	Total
Affected	2	3	3	3	2	0	13
Studied	154	161	74	188	142	74	793
Percentage affected	129	1.86	4,05	1.59	1.4	0	1.63

The genealogical data from the study has also established through Falconer Model (1965), that essential hypertension is a maltifactorial disorder. The frequency of essential hypertension in sibs, according to the present study, has been 0.1046 which is very near to the square root of the same in general population (represented by the controls) which is 0.0163 as has been shown in Table 5. Hence, essential hypertension could be a multifactorial trait. Further, the close agreement between the observed relative frequency and those expected for multifactorial trait suggests, that essential hypertension may be inherited in this manner.

TABLE 5

FREQUENCIES AND RELATIVE FREQUENCIES OF ESSENTIAL HYPERTENSION

	Frequency Observed		Relative Frequency Expected			
	General population	Sibs		Dominant	Recessive	Multifactorial
	q	s	s/q	1/2q	1/4q	$\sqrt{q}$
Essential hypertension	0.0163	0.1045	6.41	30.67	15.3	7.8

The heritability of liability to essential hypertension as estimated in the present study with the help of Falconer Model (1965) has been found to be 61:16 5.0 per cent which indicated that genetic component has been greater than the environmental component as has been shown in Table 6.

With the help of heritability of liability, first degree relatives of patients of essential hypertension, who were likely to develop the same could be identified and predicted with reasonable accuracy. Such individuals, can be effectively counseled to compromise with the environmental factors *viz.* type of diet, salt consumption and body mass, and live without essential hypertension although being genetically susceptible to it.

CONCLUSION

From the discussion, the following emerging trends have been observed:

*Essential hypertension has been a multifactorial disorder where genetic component has been found to be greater than the environmental component.

*Knowledge of genetic component facilitates identification of genetically susceptible individuals. 1

*Environmental factors could be modified, especially among the susceptible individuals to prevent and control essential hypertension.

*Modification of life style both at individual and community level could have greater impact on the control and prevention of essential hypertension. This has a definite edge over therapeutic management, since it would be a cost effective and less harmful alternative. Population-based programmes, designed to modify the influences of the environmental factors, were likely to have a marked effect on blood pressure levels in the community.

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अनिवार्य संवेदनशीलता रोग से पीड़ितों और इस रवे से बचे हुए रोगियों की तुलना करके मामलों की रोकथाम के लिए किए गए एक अध्ययन द्वारा रोग के अनुवांशिकीय कारणों का पता लगाने का एक प्रयास किया गया है। अध्ययन से प्राप्त निष्कर्षों से पता चलता है कि अनुवंशिकीय कारणों के साथ–साथ प्रयोग किए जाने वाले नमक की मात्रा, मांशाहारी आहार मुटापे जैसे अन्य सामान्य कारण भी इस रोग के होने के प्रमुख कारण थे। अध्ययन में इस बात की पुष्टि की गई है कि अनेक प्रकार के विकारों के कारण अनिवार्य संवेदनशीलता उत्पन्न होती है और इसके साथ–साथ पैतृक अवयवों की अपेक्षा पारिवारिक अवयवों के कारण भी यह रोग हो सकता है।

TABLE 6
ESTIMATION OF HERITABILITY OF LIABILITY IN ESSENTIAL HYPERTENSION

	A	N	q %	P	X	a	b	h^2±SE%
Relatives of controls:								
Maies	12	658	1.824	0.98176	2.0904	2.4592		
Females	1 3	793	1.639	0 983B1	2.1352	2.4932		
Relatives of cases:								
Male - Male	32	349	9.169	0.90831	1.3309	1.7955	0.3038	60.76 $_1$10.0
Males Female	29	296	9.797	0.90203	1.2932	1.7651	0.3368	67.36 $_t$10.5
FemalesMale	27	365	7.013	0.92967	1.4750	1.4750	0.3466	69.32+9.89
Females Female	42	402	10.448	0 89552	1.2566	1.2566	0.2428	48.56 ±9.66
Weighted mean	-	-	-	-	-	-	0.3056	61 16+5.0

A= observed number of affected individual in the sample.
N= total number of individual in the sample.
q-
tncidence=A/N.
P = 1-Q
x and asthe values corresponding to q taken from table with linear interpolation.
b s regression co-efficient of relatives on propositi (patients).
h^2_3 heritabilily of liability of the disease (Essential Hypertension).
v= sample variance of b.
SE = 2 v/b.

REFERENCES

1. GAUR, K.N. (1956) A Clinical Survey of the Incidence of Hypertension in the Rural Population. *Indian Heart Journal, 8: p.* 259-266.
2. WASIR, H.S, (1982) Blood Pressure in a Closed Urban Community. *Indian Heart Journal,* 34: p 322.
3. PADMAVATI, S. AND GUPTA, S. (1959) Blood Pressure Studies in Rural and Urban Groups in Delhi. *Circulation,* 19: p. 395.
4. GUPTA, S.P. (1977) Epidemiology of Hypertension-based on Total Community Survey in **a** Rural Population of Haryana. *Indian Heart Journal,* 29(2): p. 53.
5. JHAVERI. J.S. (1978) Know Your Blood Pressure. *Swasth Hind,* 22:(3 and 4).
6. BANERJEE, J.C. (1963) *Journal ot Association of Physicians ot India.* 11: p. 863.