

Impact of Family Planning on Fertility in Jharkhand State: Based on NFHS Data

Dilip Kumar¹, Ajit Kumar²

¹ Associate Professor, Population Research Centre, Department of Statistics, Patna University, Patna-800005 (India)

² Research Investigator, Population Research Centre, Department of Statistics, Patna University, Patna-800005 (India)

Abstract: *In the present study an attempt has been made to know the impact of family planning on fertility in Jharkhand State through the Prevalence Model. If prevalence levels of both programme and non-programme contraception are known, this technique permits the estimation of gross natural and potential fertility for assessing births averted. With the emergence of the National Family Health Survey (NFHS: 2005-06) to monitor family planning and health activities, this method becomes a useful tool. Of special interest is the ability of the procedure to yield estimates by age group as well as by type of contraceptive methods used. In the study, the standard method-specific use-effectiveness levels weight observed use and prevalence level by method have been applied. Of the total births averted in Jharkhand State by programme contraception, 80 percent of births were averted by Sterilization users in 2005-06 while the spacing methods users contributed to about 20 per cent of the birth prevention. The spacing methods need to be strengthening for the greater use. With regard to the births averted by non-programme contraception /natural methods, the main contribution was made by the users of Rhythm of about 45 percent, which was followed by the users of Withdrawal of 43 percent and by the other methods of 13 percent. Of the total birth averted in Jharkhand State, the contribution of programme contraception and non-programme contraception/ natural methods is about 85 percent and 15 percent respectively in 2005-06. The programme contraception has the dominance role to control fertility however the non-programme contraception/natural methods use should also be enhanced at the places where accessibility of programme contraception is poor.*

Keywords: Births Averted, Prevalence Model, Potential Fertility Rate and Natural Fertility Rate

1. Introduction

With the rapid growth of national family planning programme in 1990 onward, family planning administrators and policy makers felt an increasing need to evaluate the fertility impact of the programme yearly. For such, probably the most widely used measure of fertility impact is the number of births averted by a programme in a given year. An estimation of the number of births averted is typically obtained by subtracting observed fertility (i.e. fertility with programme) from potential fertility (i.e. fertility without the programme) and multiplying the differences by the appropriate base of the population. Since potential fertility is an unobservable quantity, it has to be estimated indirectly. Gross and net potential fertility are two major types of potential fertility used in the study. The gross potential fertility is the fertility that would prevail if all use of programme contraception were eliminated, without switching to the non-programme contraception. The net potential fertility is the fertility that actually would be observed if there had never been a programme. In that case, many who would have been programme users would have obtained supplies from non-programme sources. This substitution would tend to make net potential fertility lower than the gross potential fertility.

The use of contraception greatly reduces the chances of conceiving, but except in the case of sterilization, the chance is not zero. To take this contraceptive failure into account, some methods introduce a penalty for accidental failure. The simplest way to do this consists of multiplying potential fertility by 'e', the contraceptive use-effectiveness. In the present study Prevalence Model has been used in the State of Jharkhand to evaluate the number of births averted by programme and non-programme contraception efforts.

2. Prevalence Model

The prevalence model is based on age-specific and method specific prevalence rates of both programme and non-programme contraceptives. This information helps in getting the gross potential fertility and subsequently the number of births averted by programme and non-programme contraceptive efforts.

Age-specific model: The age-specific model requires information on prevalence of programme and non-programme contraception by age, age-specific fertility rates which have been taken from the NFHS data of Jharkhand State. The Census figures have been used for the female population of reproductive age. Bongaarts, J (1993) provides new estimates of gross and net impact on fertility reductions from family planning (FP) programs for 31 developing countries in Africa, Latin America, and Asia. A comparison is made of net and gross measures, and the interaction with the level of development is identified. The conclusion is reached that FP has been crucial in reducing fertility in many countries. Without FP, the total annual number of births in the late 1980s would have been 164 million instead of 120 million. There is no agreed upon measure for determining the impact of FP on fertility and estimates has ranged from 3-40%. Discrepancies in results are due to the use of multiple methodologies, of which some are unsuitable or unreliable for normal evaluation due to difference research objectives and due to conceptual differences in measurement of gross versus net impact. Gross impact refers to the reduction due to the use of contraception available from program sources. Net impact measures the reduction achieved by the presence of the program. Net and gross impact varies within each country, with net impact the smaller of the two. Gross impact usually

Volume 8 Issue 8, August 2019

www.ijsr.net

Licensed Under Creative Commons Attribution CC BY

was measured with statistics on acceptors. The measures of gross potential fertility, gross natural fertility and births averted are obtained as follows;

$$NAF_a = AF_a / \{1 - C_a(u_a' + u_a'')\}$$

$$PAF_a = AF_a \{1 - C_a(u_a'')\} / \{1 - C_a(u_a' + u_a'')\}$$

$$BA_a = (PAF_a - AF_a) POP_a$$

$$BAN_a = (NAF_a - PAF_a) POP_a$$

Where;

a = age group of women, a = 15-19,...

u_a' = prevalence of programme contraception, by age

u_a'' = prevalence of non-programme contraception, by age

AF_a = age-specific fertility rate

PAF_a = potential age-specific fertility rate

NAF_a = natural age-specific fertility rate

BA_a = birth averted by programme contraception, by age

BAN_a = birth averted by non-programme contraception, by age

POP_a = number of women in age group a

C_a = elasticity coefficient by age

In order to estimate the gross potential fertility and natural fertility, information on elasticity coefficient of sterility and use-effectiveness by age of women is utilized.

$$C(15 - 19) = 0.620$$

$$C(20 - 24) = 0.620$$

$$C(25 - 29) = 0.823$$

$$C(30 - 34) = 0.940$$

$$C(35 - 39) = 1.022$$

$$C(40 - 44) = 1.309$$

$$C(45 - 49) = 1.898$$

The method-specific model: It drives the number of births averted by each programme and non-programme method through the data on prevalence and use-effectiveness of contraception for both sectors. Estimates of births averted are obtained by the following equations:

$$BA_m = BA \cdot u_m' \cdot e_m' / (u' \cdot e')$$

$$BAN_m = BAN \cdot u_m'' \cdot e_m'' / (u'' \cdot e_m'')$$

u_m' = prevalence of programme method 'm'

u_m'' = prevalence of non-programme method 'm'

e_m' = use-effectiveness of programme method 'm'

e_m'' = use-effectiveness of non-programme method 'm'

$$u' = \sum_m u_m'$$

$$u'' = \sum_m u_m''$$

$$e' = \sum_m u_m' \cdot e_m' / u'$$

$$e_m'' = \sum_m u_m'' \cdot e_m'' / u''$$

3. Data Estimates

National Family Health Survey (NFHS-3) is the third in the NFHS series of surveys in 2005-06. The first NFHS was conducted in 1992-93, and the second (NFHS-2) was conducted in 1998-99. All three NFHS surveys were conducted under the stewardship of the Ministry of Health and Family Welfare (MoHFW), Government of India, New Delhi.

In Jharkhand, NFHS-3 was based on a sample of 2,483 households that is representative at the State level and

within the State at the urban and rural levels. Women age 15-49 were eligible for interview in all NFHS-3 sample households, while men age 15-54 were eligible for interview in a subsample of households. NFHS-3 interviewed 2,983 women age 15-49 and 996 men age 15-54 in Jharkhand State to obtain information on population, health, and nutrition.

The data of the National Family Health Survey (NFHS) in Jharkhand State during 2005-06 were utilized to estimate the number of births averted by programme and non-programme sources separately. The prevalence information by age and method was obtained for currently married females who are currently using and contraceptive method. The female population of reproductive ages 15-49 years was estimated from the 2001 population census figures.

The data problem arose when programme and non-programme methods were to be sorted out. Some of the programme methods and contraceptive services, such as condoms and pills, are available outside the programme at the private clinic. However, the data of such services are not available. It was thus assumed that all modern methods were offered by the programme and were termed programme methods. All traditional methods were considered non-programme methods. This assumption is fairly reasonable because modern contraceptives, such as condoms and pills, are widely distributed through the programme.

4. Results

The application of the pertinent formulae yielded the estimates of gross natural fertility and gross potential fertility of Jharkhand State (Table 1). The difference between gross potential and gross natural fertility, on the one hand, and observed fertility, on the other hand, provided the basis for estimating births averted by programme and non-programme contraception for the State (Table 2). The results show that young fertile women avert the majority of births by non-programme methods compared to the programme methods. The births averted by programme contraception are concentrated among women aged 20-29 years in the State. The findings confirm an earlier study where mean age of use was found to be high in the early thirties (Kumar, D; 1990). It is noted that, in general, the effectiveness or impact of the program resembles a bell-shaped curve, i.e., in the initial phases pregnancy reduction increased to reach a plateau and then declined in the remaining phases. This may represent a cyclical occurrence and pregnancy reduction may again increase. Continual follow-up is necessary for an extended time period to analyze any additional trends in fertility reduction.

5. Summary

The results presented in Table 3 summarize the outcome of the study. The silent feature of the study is that it is not based on the service statistics and most of the data are obtained from the State level survey. In the study, the standard method-specific use-effectiveness levels weight observed use and prevalence level by method. Of the 179076 births averted in Jharkhand State by programme contraception 143598 (80.2 percent) births were averted by

sterilization users in 2005-06 while the spacing methods users contributed to only 19.8 per cent of the birth prevention. The spacing methods need to be strengthen for the greater use. With regard to the 31015 births averted by non-programme contraception, the main contribution was made by the users of Rhythm (44.7 percent) that was followed by the users of Withdrawal (42.6 percent) and by the other methods (12.8 percent). Of the total birth averted in

Jharkhand State, the contribution of programme contraception and non-programme contraception is about 85 percent and 15 percent in 2005-06. The programme contraception has the dominance role to control fertility however the non-programme contraception use should also be enhanced at the places where accessibility of programme contraception is poor.

Table 1: Prevalence of Programme and non-programme contraception, observed fertility rates and estimated natural and gross fertility rates by age-group in Jharkhand State, 2005-06

Age group	Prevalence of		Observed fertility, 2005 AF _a	Elasticity coefficient C _a	1 - C _a (u _a ' + u _a '')	1 - C _a (u _a '')	Natural fertility rate NAF _a	Gross potential fertility rate PAF _a
	Programme contraception u _a '	Non-programme contraception u _a ''						
a	u _a '	u _a ''	AF _a	C _a			NAF _a	PAF _a
15-19	4.3	2.4	53.7	0.620	0.95846	0.98512	56.0	55.2
20-24	17.4	3.6	249.3	0.620	0.8698	0.97768	286.6	280.2
25-29	31.8	6	181.2	0.823	0.688906	0.95062	263.0	250.0
30-34	19.1	2.6	116.6	0.940	0.79602	0.97556	146.5	142.9
35-39	24.8	3.4	53.2	1.022	0.711796	0.96525	74.7	72.1
40-44	22.9	1.1	35.2	1.309	0.68584	0.98560	51.3	50.6
45-49	20.9	3.3	18.9	1.898	0.540684	0.93737	35.0	32.8

Table 2: Gross fertility and gross birth averted by the programme and non-programme contraception by age group in Jharkhand State, 2005-06

Age group	Female Population, 2006	Gross fertility effect of:		Birth averted by	
		Programme Contraception	Non-programme contraception	Programme methods	Non-programme methods
a	POP _a	PAF _a - AF _a	NAF _a - PAF _a	BA _a	BAN _a
15-19	1586000	0.00149	0.00083	2369 (1.3%)	1322 (4.3%)
20-24	1238000	0.03092	0.00640	38279 (21.4)	7920 (25.5%)
25-29	1055000	0.06884	0.01299	72624 (40.6%)	13703 (44.2%)
30-34	997000	0.02630	0.00358	26220 (14.6%)	3569 (11.5%)
35-39	929000	0.01894	0.00260	17598 (9.8%)	2413 (7.8%)
40-44	818000	0.01538	0.00074	12585 (7.0%)	605 (1.9%)
45-49	678000	0.01387	0.00219	9401 (5.2%)	1484 (4.8%)
Total	7301000			179076 (100.0%)	31015 (100.0%)

Table 3: Estimated birth averted by programme and non-programme contraception in Jharkhand State, 2005-06

Methods	Prevalence of		Use effectiveness of		Estimated birth averted by	
	Programme contraception	Non-programme contraception	Programme contraception	Non-programme contraception	Programme contraception	Non-programme contraception
	u _m '	u _m ''	e _m '	e _m ''	BA _m	BAN _m
Oral pills	3.8		0.9		20635 (11.5%)	
IUD	0.6		0.95		3439 (1.9%)	
Condom	2.7		0.7		11403 (6.4%)	
Tubectomy	23.4		1.0		141185 (78.8%)	
Vasectomy	0.4		1.0		2413 (1.3%)	
Rhythm		2.1		0.5		13858 (44.7%)
Withdrawal		2		0.5		13198 (42.6%)
Other methods		0.6		0.5		3959 (12.8%)
Total	30.9	4.7			179076 (100.0%)	31015 (100.0%)

References

[1] Bongaarts, John (1985): 'A Prevalence Model for Evaluating the Fertility Effect of Family planning Programmes: Age-specific and Method specific Results', Studies to Enhance the Evaluation of Family Planning Programmes, United Nations, New York ST/ESA/SER.A/87, pp.246.

[2] _____ (1993): 'The fertility impact of family planning programs', New York, Population Council, Research Division Working Papers No.47, pp.35.

[3] Census of India, 2001: Age Level Data of the States of India, India Level (In CD).

[4] International Institute for Population Sciences (IIPS) and ORC Macro. 2008. *National Family Health Survey (NFHS-3), India, 2005-06: Jharkhand*. Mumbai: IIPS.

[5] Kumar, Dilip (1990): 'Evaluation of Family welfare and MCH Programmes in Some PHCs of Patna district', Population Research Centre, Patna University, Patna, PRC Mimeograph Series No. 118, pp.91.

- [6] Ministry of Health and Family Welfare, Government of India, New Delhi 'Family Welfare Statistics in India, 2009.
- [7] Potter, Robert G. 1969. Estimating births averted in a family planning program, in S. J. Behrman, Leslie Corsa, and Ronald Freedman (eds.), Fertility and Family Planning: A World View. Ann Arbor: University of Michigan Press, pp. 413-434.