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ABOVE REPLACEMENT FERTILITY LEVEL IN MANIPUR, NORTH EAST INDIA

KEY WORDS: education, odds ratio, p-value, son

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ABSTRACT

Experiencing heterogeneity in stages of demographic transition, Manipur is also one of high fertility states in India. Despite the immense values in 12 strategic themes in order to achieve the national socio-demographic goals for stable population in respect of National Population Policy (NPP)-2000, no community based study for identifying the causal factors of completed fertility is witnessed in north east hilly states. It is to evaluate the socio-demographic determinants of above replacement fertility of elderly married women aged 50-55 years. A retrospective cross-sectional study of 1217 ever-married women after experiencing their menopause was conducted in the two districts of Manipur valley – Imphal East and Imphal West under cluster sampling scheme. The survey was conducted during the period from October, 2017 to June, 2018 taking 11th July 2017 as reference date of the survey. Multiple binary logistic regression models are used in the community based empirical data. The completed fertility (3.2) which is above replacement fertility is found to vary with education (P<0.01), sex of 2nd birth (P<0.01), and also couple's desire of son (P<0.01) in the population.

Introduction

With 1.21 billion populations in 2011 and it will be around 1.7 billion in 2050 leading to first populous country[1], India is lagging behind the national goal of replacement fertility, 2.1 children per woman by 2010 as main component of a stable population by 2045 at a level consistent with sustainable development. In one sense, India is known to be the first country to formulate the National Family Planning (FP) Programme in 1952 in the world. The main target of the programme is to promote responsible parenthood with a two child norm through independent choice of PF method best suited to the accepter. Despite, the rate for acceptance and practice of FP methods varies within societies due to many constraints in their own and also more than 70,000 children added daily to the Indian population[2]. During the last decade (2001-2011), it grew by 17.7% adding 181 million people to the country's population. But, the world total fertility has declined to 2.6 children in 2005-2010[3]. The Ministry of Home Affairs in 2011 also reports that in about forty year (1965-2009) period, the contraceptive usage has more than quadrupled say from 13% of married women in 1970 to 56% in 2006, and the total fertility rate has more than halved (from 5.7 in 1996 to 2.7 in 2006) but the national fertility rate is still high to generate long term population growth. Meanwhile, the United Nations estimated that world population grew at an annual rate of 1.23% during 2001-2010 while India's population grew at 1.64% per annum during 2001-2011.

The total fertility rate (TFR) in 2013 was estimated at 2.3 births per woman for India as a whole[4]. It is at or below the replacement level in 13 out of the 17 Indian states and Union Territories in the 1st phase of NFHS-4[5]. The TFR ranges from 1.2 births per woman in Sikkim to 3.4 births per woman in Bihar. Many research findings also confirmed that fertility reduces with increase in socio-economic status. Kerala, for instance, has controlled fertility in the late 20th century through its socio-economic development[6]. The overall prevalence of contraceptive in the state is observed to be 70.3% which is associated with age and parity but not literacy[7]. But, in spite of so much emphasises given to rural and backward communities since seventy-one years of Indian independence, North East States are nowhere near a satisfactory solution in terms of socio-demographic status.

The above replacement fertility level or so termed third birth transition is a serious demographic phenomenon for population growth. Lack of education and son preference may be sole responsible factors to it. The past studies in India have identified three major factors for son preference. They are economic, socio-cultural and religious utilities. Sons are more likely than daughters to provide family labour on the farm or in family business and support their parents of old age, although there is some recognition that sons are no longer a dependable source of old age support[8,9,10]. A son brings upon marriage a daughter-in-law into his family and she provides additional help around the house as well as an economic reward in the form of dowry payments. In the context of India's patriarchal family system, having one son is imperative for continuation of the family line, and many sons provide additional status to the family[11,12,13]. The utility of having sons also arises from the important religious functions that only sons can provide[14,15]. According to Hindu tradition, sons are needed to kindle the funeral pyre of their deceased parents and to help in the salvation of their souls. Most of the Indian couples have thus a strong preference for sons over daughters. In an effort to have sons, many couples continue to have children after achieving their desire family size. In case of intention, about 20% of Indian couples want more sons than daughters, but only 2 to 3% of them want more daughters than sons[16]. In Manipur, 31.2% of ever married women who want more sons than daughters according to NFHS-3:2005-06 which is declining from that of 36.5% in NFHS-2:1998-99 and 43.4% in NFHS-1:1992-93[17]. Thus, the focus of the present study is to investigate the socio-demographic determinants of higher fertility or third birth transition. In other words, it is to evaluate the socio-demographic determinants of differential in the completed fertility of elderly married women aged 50-55 years in Manipur.

Materials and Methods

A retrospective cross-sectional study of 1217 ever-married women after experiencing their menopause was conducted in the two districts of Manipur valley – Imphal East and Imphal West under cluster sampling scheme. The survey was performed during the period from October, 2017 to June, 2018 taking 11th July 2017 as reference date of the survey. A binary logistic regression is used in the community based empirical data. The logistic regression model is adopted to identify the determinants of third birth transition or beyond replacement fertility (2.1) in the state. Here, the response variable is the transition of third birth which is quantified by the issue of third live birth. It is defined to be 1, if the mother has at least third live birth and 0, otherwise (having at most two live births). The explanatory variables considered are religion (1for subject religion & 0 for other religion), residence (urban=1& rural=0), type of family (nuclear=1& joint=0), educational level,

employment status (employed=1 & others=0), age at marriage, couple's desire number of son, death of previous child during infancy say infant mortality (death=1, alive=0), sex of previous/ index child (female=1, male=0) and the use of contraceptives (used=1, others=0) during transition of third birth. For categorical variables, binary dummy variable (0, 1) is utilized. The educational level is measured by the number of completed academic years in education. The results of the analysis are interpreted on the basis of P-values of the regression coefficients (B) and odds ratios (OR) quantified by Exp.(B) of the variables.

Analysis and Findings

Out of 1217 eligible women, about 50% that is 695 women are found to have their third birth in the population. A binary logistic regression analysis on the transition of third birth (1 if at least 3rd birth occurred, 0 otherwise) is carried out to identify the determinants thereof. Here, seven significant variables out of fourteen classified ones can be detected with their adjusted ORs shown in Table-1. The significant factors found in the model are education of wife (P<0.01, OR=0.90), age at marriage of wife (P<0.01, OR=0.89), employment of husband (P<0.01, OR=2.16), couple's desire number of son (P<0.01, OR=1.73), sex of previous/index child (P<0.01, OR=2.08), death of previous child during infancy (P<0.05, OR=2.39) and duration of post partum amenorrhoea (P<0.05, OR=1.04). The significant factors are positively associated with third birth except level of education and age at marriage which have negative impacts thereon. Here, the level of significance of each variable is observed after adjusted the effects of other factors under study. It is to say that the effects of the significant variables are found keeping that of others to be constant or so termed adjusted.

In the stepwise logistic regression, the best set of determinants of third birth is found to be five factors. They are type of family, education of wife, age at marriage, couple's desire number of son, and sex of previous child depicted in Table-2. In the last fifth step, the logistic regression is fitted with the five variables. After adjusted the joint effects of four other variables in the last model, achievement of educational level and age at marriage of wife are observed to be negatively associated with the phenomenon of third birth transition. Among the three variables having positive impacts on the phenomenon, the most important factor is sex of index child being female. While controlled the effects of four other variables in the last model, the risk of having 3rd birth can significantly be reduced (P<0.01) by 7% corresponding to one year advancement in education as its OR-value 0.93 with 95%CI: 0.901-0.95. As one year delay in marriage, the women can be free of 11% from the risk of 3rd birth in the sense that at an average a woman has 11% more significant risk of being 3rd birth with respect to one year earlier of her marriage (P<0.01, OR=0.89 with 95%CI: 0.87-0.93). But, highly significant risk of 74% is observed to each increment in the couple's desire number of son as supported by its test values (P<0.01, OR=1.74 95%CI: 1.42-2.143) as the joint effect of other four factors in the last model is typically controlled. This sex preference effect is again reemphasized that the high risk of 3rd birth phenomenon (P<0.001) can be quantified to be at least double times in the previous 2nd child is female than that of male (OR=2.07 with 95%CI: 1.53-2.79).

Discussion

Five determinants of third birth transition are found to be educational level of wife, age at marriage, couple's desire number of son, sex of previous child and the type of family. As such, the five significant factors fit the last regression model. In many societies as the couples are educated, eagerness to restrict the family size increases. The present findings observe the similar view. But, comparing the effects of education of husband (P>0.05) with the wife counterpart, it is evident that the education of wife (P<0.01, OR=0.90) plays more significant role in reducing third birth transition. It is observed in logistic regression with fourteen explanatory variables after controlling the effects of other variables. The effects may include delaying age at marriage, reduction in the desired family size, increase opportunities for personal advancement, awareness of social mobility and freedom from close familiarities of women outside the home and greater exposure to knowledge and favourable attitude towards family limitations. Thus, enhancement of education is supposed to result in non-familial aspiration and a greater understanding of the process and ways of controlling high fertility. This view is supported by the findings of Singh et al,[15]. Again from the event-history analysis of 2000 Egyptian Demographic and Health Survey, Vignoli[10] stresses that the difficult change in the fertility of women with high educational status seems to be responsible for the stalling fertility decline during recent years. The study also revealed that the preference for at least one son in the family on the progression to the third child is weakening among women who have completed secondary education.

However, the sex of the previous/ index child is demographic factor which can not be managed by human hand. The value of the OR say 2.07 means that the risk of third birth transition is increased more than double times when the previous child is female than that of male counterpart. While adjusted the joint effects of other four variables in the last model, couple's desire number of son is also observed to be high influential factor (P<0.01) leading to third birth. It is advocated by OR value of 1.74 which indicates that the risk of third birth is increased by 74% corresponding to desire of one more son. It is thought to be caused by the fact that influence of son preference is high in the study population. This view is supported by Singh et al.[15]. They found that the duration of waiting time to conception is significantly short as the desire number of son increases. The finding is in agreement with some other past findings too. In many developing countries, reproductive intentions and behaviours are strongly influenced by sex of surviving children[13,17,18]. This ill behave may have retarded India's fertility decline and therefore the present fertility level is far behind the national socio-demographic goals which is to be achieved by 2010 according to the prime target of National Population Policy 2000.

CONCLUSION

With identification of the determinants – family type, education, age at marriage, desire number of son, and sex of previous child on third birth transition, the findings may be baseline information future researchers of maternal health development which might perhaps be linked with the national target of population stabilization in India particularly in north east hilly states.

Table -1: Odds Ratios of variables on 3rd births transition

Variable	b	Wald	P-value	OR	95%CI for OR	
					Lower	Upper
Residence	-0.31	2.61	P>0.05	0.74	0.51	1.07
Type of family	0.31	3.77	P>0.05	1.37	1.00	1.87
Religion (Hindu)	0.09	0.15	P>0.05	1.10	0.69	1.76
Religion (Muslim)	0.15	0.05	P>0.05	1.17	0.28	4.89
Education of husband	0.02	0.51	P>0.05	1.02	0.97	1.07
Education of wife	-0.10	31.53	P<0.01	0.90	0.87	0.94
Employment status of husband	0.77	19.89	P<0.01	2.16	1.54	3.03
Employment status of wife	0.66	2.88	P>0.05	1.93	0.90	4.12

Age at marriage of wife	-0.11	37.76	P<0.01	0.89	0.86	0.93
Couples desire number of son	0.55	25.92	P<0.01	1.73	1.40	2.13
Sex of previous child	0.73	21.96	P<0.01	2.08	1.53	2.83
Use of contraceptives	0.12	0.15	P>0.05	1.13	0.61	2.11
Death of previous child	0.87	18.11	P<0.05	2.39	1.03	6.17
Post partum amenorrhoea	0.04	5.12	P<0.05	1.04	1.01	1.07
Constant	1.62	6.39	P<0.05	5.03		

Table-2: Odds Ratios of variables on 3rd birth transition in stepwise models

Step	Variable	b	Wald	P-value	OR	95% CI for OR	
						Lower	Upper
1	Age at marriage of wife	-0.14	72.52	P<0.01	0.87	0.85	0.90
	Constant	3.63	94.63	P<0.01	37.64		
2	Education of wife	-0.08	28.08	P<0.01	0.92	0.89	0.95
	Age at marriage of wife	-0.11	44.81	P<0.01	0.89	0.86	0.92
	Constant	3.77	97.84	P<0.01	43.53		
3	Education of wife	-0.08	24.81	P<0.01	0.93	0.90	0.96
	Age at marriage of wife	-0.10	37.18	P<0.01	0.90	0.87	0.93
	Couples desire no. of son	0.44	19.44	P<0.01	1.56	1.28	1.89
	Constant	2.62	33.19	P<0.01	13.75		
4	Education of wife	-0.08	26.40	P<0.01	0.92	0.896	0.95
	Age at marriage of wife	-0.11	37.24	P<0.01	0.90	0.87	0.93
	Couples desire no. of son	0.54	26.63	P<0.01	1.72	1.39	2.11
	Sex of previous child	0.74	23.47	P<0.01	2.09	1.55	2.82
	Constant	2.14	20.64	P<0.01	8.47		
5	Type of family	0.32	4.16	P<0.05	1.37	1.01	1.86
	Education of wife	-0.08	24.92	P<0.01	0.93	0.89	0.95
	Age at marriage of wife	-0.11	37.89	P<0.01	0.90	0.87	0.93
	Couples desire no. of son	0.56	27.75	P<0.01	1.74	1.41	2.14
	Sex of previous child	0.73	22.53	P<0.01	2.07	1.53	2.79
	Constant	1.92	15.78	P<0.01	6.79		

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