Factors Influencing Women Reproductive Span in International Border State Manipur

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Abstract

The reproductive span defined to be 'time interval between first marriage and menopause or sterilization' and also varying with birth stopping types and socio-demographic variables. The present study aims to explore the causal factors of the variation in women's reproductive span in Manipur, the easternmost Indian state internationally bordering with Myanmar. Methods: Under cluster sampling scheme, a cross sectional as well as community base study was conducted during November 2017 to October 2018. It included 1295 currently married women of age 35-55 years experiencing at least one live birth. Having the stopping event, only 395 illegible women gave the reproductive span of 24 years consisting of longest period of 28 years due to natural menopause followed by 16 years with hysterectomy and 12 years by sterilization. The duration is significantly influenced by age at marriage ($P<0.01$), desire number of son ($P<0.01$), former place of residence ($P<0.05$), educational level ($P<0.01$) and family income ($P<0.05$) in the population. The findings may the baseline information of the pattern of women reproductive span not only in Manipur but in Indian North Eastern Region.

Keywords: menopause, sterilization, education, son, p-value

Introduction

At least 800 women die every day from preventable causes related to maternal health complicacies which tops the deaths in developing countries and is also high among women living in the low-income communities of rural areas (WHO, 2018). For reproductive health, the proximate constraints on fertility and the probability of conception are the huge social relevance as women try to conceive late in life and also experience fertility complicacies (Eijkemans et al. 2014). The age at last pregnancy also has health consequences for both mother and fetus (Towner et al. 2016). Thus, the study of women's reproductive span with their birth stopping types has non-trivial roles in maternal health planning specifically in developing countries. It is also inevitable in couple's reproductive planning and decision to end child birth. In one sense, the couple's reproductive decision is influenced by various socio-demographic and behavioral factors (Sabu et al. 2004). A number of children and number of pregnancies also contribute in the decision of a woman makes about her reproductive health (Srivastava and Narayanan, 2018).

As the date of effective marriage of a currently married woman to be the initial event of her duration of reproductive span, its last or terminating event is taken by one of the three phenomena say natural menopause, sterilization and hysterectomy. The last event is also

known as stopping event of human birth. Thus, the duration of reproductive span of a woman is defined as the time interval between her first marriage and menopause or sterilization. Natural menopause or simply menopause is the time of a woman's life when reproductive capacity ceases. The women having at least 12 months of amenorrhoea are taken as at menopause. In other words, when a women's menstruation has ceased spontaneously at least for a year, it is menopause (Porter et al. 1996). Although menopause is an inevitable event for women, its age at the onset shows interpersonal variation. It is possible to observe menopause at an early age in some females, while in the later age in others. Menopause is the period when plenty of physiological and biochemical changes occur in the body (Topcuoglu et al. 2005). Menopause is also defined as a natural phenomenon consisting of follicular atresia and decrease in ovarian hormonal secretions (Ouzounian et al. 2005). In life history theory, birth stopping differs from menopause due to many factors. Stopping behaviours is also more amenable to direct control in the sense that age at menopause exhibits no systematic variation through nutritional affects. But compare to last birth, there is no evidence that women can easily shift their age at menopause through non-medical approaches (Porter et al. 1996). In this context, men's influence on family size has often been ignored but men who reproduce do have an age at which they last father a surviving baby and many of the behaviours that impact their age are under the influence of both the mother and father (Kaplan et al. 2010). As a stopping event the term 'sterilization' is defined here by a surgical operation or any other process that induces sterility in women except removal of uterus. And, the surgical removal of uterus due to any cause is considered to be 'hysterectomy'. The duration variable is hypothesized to be functionally related with various socio-demographic variables. Sexual relationship is initiated only after marriage and subsequent childbearing is usually expected to begin soon after marriage in the study population.

Materials and Methods

Here only 395 eligible women are taken into consideration, selected from the present sample of 1295 currently married women with age of below 55 year. The field data was collected from two districts – Bishnupur (valley: 609) and Churachandpur (hill: 686) of Manipur, the easternmost international bordering Indian state. The survey was conducted during November, 2017 to October, 2018 under cluster sampling scheme. The eligible women for case event are fulfilling the two criteria: i) she must attain the minimum age of 35 year and maximum of 55 year and ii) she must have experienced one of the three stopping events – natural menopause, sterilization and hysterectomy. The reproductive span of the women is analysed according to type of birth stopping and ten socio-demographic variables – age at menarche, age at marriage, number of pregnancies, number of live births, couple's desire number of son, present place of residence, former place of residence (before marriage), type of family, level of education, and family income.

Analysis and Results

In the present study, it is to check the variability in the duration of reproductive span according to type of stopping. Here, the eligible women having case event are categorized by type of stopping say natural menopause, sterilization and hysterectomy. Among the eligible women who lasted their reproductive life, about 70% of them ended their reproductive activity

due to natural menopause in 28 year while 22% of the women ended such activity due to sterilization in 12 year and only 8% lost their reproductive span with hysterectomy in 16 year.

Table-1: *Median reproductive span with respect to type of stopping*

Type of stopping	Cases (%)	Censored (%)	Estimate	S.E
Natural menopause	70.4	26.3	28	0.54
Sterilization	21.8	0.0	12	0.53
Hysterectomy	7.8	0.0	16	3.49
Overall	**100**	**18.5**	**24**	**0.67**
Test	Log Rank (Mantel-Cox): χ^2 = 464.49; P<0.01			

While overall median duration of reproductive span is found to be 24 ± 0.67 year (median $\pm$ standard error), the longest reproductive span (28 ± 0.54 yr) of the eligible women is observed in the women who have natural menopause and the shortest duration (12 ± 0.53 yr) is found in the women who have experienced sterilization. Experiencing hysterectomy in their live, about 8% of the eligible women have the reproductive span of 16 ± 3.49 yr depicted in Table - 1. Applying the Log-rank test, the variation in the duration of reproductive span with respect to the type of stopping of the eligible women is highly significant (χ^2 =464.5, P<0.01). The significant variation in the reproductive span may be thought to be caused by various factors. However, the shortest life span of 12 year due to sterilization is remarkable. This stopping type say sterilization may have a linkage with the number of living children particularly the number of living son in the population. It is to say that the sterilization may significantly be related with son preference or so termed the number of living son achieved by the couples. But the shorter span with hysterectomy may be associated with health status of the women under investigation.

The distribution of median duration of reproductive span of the 632 eligible women according to some interested socio-economic and demographic variables is shown in Table - 2. Here, with a high variation (SE=3.56 yr), the long median duration (25 year) of the reproductive span is observed in the lower age at menarche category of below 12 year while its overall median duration is 24 ± 0.67 year. The shortest median duration (21 ± 1.35 year) is found higher age at menarche class of at least 16 year. Though, having some visible differences in the life span the variation in the median duration of reproductive life span according to age at menarche is found to be statistically insignificant (χ^2 =4.77, P>0.05). Notwithstanding, this insignificant finding is drawn irrespective of the joint effects of other factors under study.

Irrespective of the joint effects of other variables, the age at marriage has significant impact on the components of birth intervals – postpartum amenorrhoea and waiting time to conception. It is witnessed in the previous chapters of the present report. Here, the effect of age at marriage on their reproductive life span has been investigated. While classified the women's age at marriage (in year) into five as below 15, 15-20, 20-25, 25-30, and 30 and above, the distribution of median duration of reproductive span of the eligible women according to their age at marriage. It is observed that there is an inverse relation between the age at marriage and their median duration of reproductive span. With a high variation (SE=2.64 yr), the long median duration (31 year) of the reproductive span is observed in the lowest age at marriage of below 15 year while its overall median duration is 24 ± 0.67 year. The shortest median duration (13 ± 0.69 year) is found highest age at marriage of at least 30 year. The variation in the median duration of reproductive life span according to age at marriage is found to be highly significant

(Log Rank, $\chi^2 = 189.99$, P<0.01). However, this significant finding is drawn irrespective of the joint effects of other factors under study. In the study population, is may be noted that the women who married before reaching 20 year get the longer life span than the median reproductive span of 24 year. Among the socio-demographic variables, son-preference as quantified by the couple's desire number of son has also significant contribution on the variation in the reproductive span in the population ($\chi^2 = 10.5$, P<0.01). Obviously, the duration of women's reproductive span is positively associated with the degree of son preference in the sense that the span is found to be decreased from 21 year to 28 year corresponding to the couple's desire of at most one son to that of at least of three sons respectively. One of the important findings of the present investigation is that the reproductive span is observed to be more influential in the former place of residence than that of present place of residence. It is stated that the women's place of residence before marriage has more significant impact (P<0.05) on their reproductive span than that of present place of residence (P>0.05), shown in Table - 2A. Also, educational level ($\chi^2 = 34.48$, P<0.01) of women and the family income ($\chi^2 = 11.44$, P<0.05) have their significant impacts on the reproductive span in the population irrespective the joint effects of other variables under investigation.

Table-2: *Median reproductive span with respect to socio-demographic factors*

Variable	Category	Cases (%)	Censored (%)	Estimate (year)	S.E	Test value
Age at Menarche	<12	6.2	20.5	25	3.56	$\chi^2 = 4.77$; P>0.05
	12-14	34.1	19.4	25	0.98	
	14-16	41.3	16.9	23	1.37	
	16+	18.4	19.8	21	1.35	
Age at Marriage	<15	1.8	0.0	31	2.64	$\chi^2 = 189.9$; P<0.01
	15-20	39.6	14.3	29	0.39	
	20-25	30.4	19.3	22	1.18	
	25-30	18.5	24.8	19	0.82	
	30+	9.7	24.6	13	0.69	
No. of Pregnancy	<3	11.9	12.0	22	3.71	$\chi^2 = 3.59$; P>0.05
	3-5	64.9	20.7	22	0.90	
	6+	23.2	15.6	26	1.39	
No. of Live Birth	≤1	6.0	13.2	16	3.27	$\chi^2 = 4.49$; P>0.05
	2-3	40.5	20.3	21	1.17	
	4-5	41.3	20.7	25	1.21	
	6+	12.2	7.8	26	1.56	
Desire No. of Son	At most 1	25.2	18.9	21	1.32	$\chi^2 = 10.48$; P<0.01
	2	61.6	18.3	24	0.97	
	At least 3	13.2	19.0	28	1.81	
Present Place of Residence	Urban	51.9	15.2	22	0.97	$\chi^2 = 2.62$; P>0.05
	Rural	48.1	22.3	25	1.09	
Former Place of Residence	Urban	41.8	10.7	21	0.91	$\chi^2 = 5.82$; P<0.05
	Rural	58.2	24.2	25	0.80	
Type of family	Nuclear	57.3	22.4	23	1.04	$\chi^2 = 0.36$; P>0.05
	Joint	42.7	13.3	24	1.10	
Level of Education	Illiterate	38.4	14.8	27	1.05	$\chi^2 = 34.48$; P<0.01
	Literate	12.2	28.6	26	1.12	
	Matriculate	29.4	17.2	22	1.38	
	10+2 level	5.3	21.2	18	3.21	
	Graduate & above	14.7	21.5	19	1.19	
Family Income ('000Rs)	<5	21.8	18.8	23	1.50	$\chi^2 = 11.44$; P<0.05
	5-10	45.1	18.2	24	0.98	
	10-15	23.1	22.6	25	2.04	
	15-20	6.5	9.8	19	2.65	
	20+	3.5	9.1	19	4.16	

Overall	100	18.5	24	0.67	Log Rank (Mantel-Cox)

Discussion

In this study, the reproductive span of a woman is longest as 28 years due to natural menopause highly significantly higher than hysterectomy's 16 years and sterilisation's 12 years. It might not have managed by human hand and also seen in the past findings (Porter et al. 1996). Apart from these three births stopping types, the reproductive span is varied significantly with socio-economic variables like family income, place of residence and also educational level of the woman. It is incorporated with findings of the study conducted in Madhya Pradesh which have again linkage with couple's decision on reproductive behavious (Sabu et al. 2004). The longest median estimate of the duration variable here is 28 years corresponding to couple's most desire number of son (at least three son) rather than 21 years duration with respect to couple's minimum desire number of son (at most one son). This positive relationship is again linked with the past findings (Sabu et al. 2004).

Conclusion

The empirical findings revealed that out of 1295 currently married women of aged 35-55 year only 395 (30.5%) eligible women had their stopping events of reproduction. In this survival analysis highly, significant variation in the median duration of reproductive span was witnessed with Log-rank (χ^2 ; P<0.01) due to natural menopause (28 yr), hysterectomy (16 yr) and sterilization (12 yr). The duration variable was found to vary significantly with family income and former place of residence (before marriage) of the women and highly significantly influenced by age at marriage, couple's desire number of son, and educational level.

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