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Differential Pattern of Duration of Waiting Time to Conception of Women in Manipur

N. Sharat Singh[1], N. Sanajaoba Singh[2] and R.K. Narendra[3]

1. Thoubal College, Thoubal, Manipur, India
E-mail: demosarat@yahoo.com
2. Directorate of Census Operations, Porompat, Manipur, India
3. Unit of Biostatistics, Regional Institute of Medical Sciences, Imphal, Manipur, India
E-mail: biostatrims@yahoo.com

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ABSTRACT To investigate the differential pattern of duration of waiting time to conception of women in Manipur by using survival analysis technique, a sample of 1225 currently married women having at least one live birth is included in the study. The estimated median duration of waiting time to conception and cumulative proportion of women who have not conceived at specified months by socio-demographic and behavioural factors are obtained by using life table methods. Log-rank test is applied to check the significant variations in the duration of waiting time to conception with socio-demographic and behaviouial factors. The median duration of waiting time to conception is 18 months. Among the fifteen variables of interest, age at marriage of wife, parity, infant mortality, lactation, use of contraceptives, religion, educational level of husband and wife, employment status of husband and income are found to be highly influential (at least $P< 0.01$) factors on the duration of waiting time to conception. Sex of child has a significant ($P< 0.05$) impact on the dynamics of duration of waiting time to conception.

INTRODUCTION

According to U.S. Census Bureau, International Programs Division, the world population reached 6.8 billion in 2009, is expected to reach 9.15 billion in 2050, and we are growing by 78 million a year. As per 2001 Census reports, India's population as on March 2001 was 1027 million. Its share of the world surface area of 135.79 million sq.km is a mere 2.4%; its share of the world population is 16.7%. The United Nations Population Division estimates that India is likely to overtake China in 2050 and become the world's most populous country with a share of 17.2% of the total world population. India is in the midst of a demographic transition, with fertility rates definitely declining, though not as fast as is expected. A lag in the decline in fertility in relation to mortality has resulted in the sizable growth of India's population so far which will likely to continue in the following several decades. The decline in the fertility level also varies in different states and different sections of the society. Currently, a woman in India will have an average of 2.7 children in her lifetime (NFHS-3 2007). Fertility rates are at or below the replacement level of 2.1 children per woman in 10 states, say, Andhra Pradesh, Delhi, Goa, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Punjab, Sikkim, and Tamil Nadu. Some other states are close to replacement level of fertility. In contrast, fertility rates are highest in Bihar and Utter Pradesh, where a woman would have about 4 children during her lifetime. Fertility in rural areas is 3 children per woman, much higher than in urban areas where the replacement level fertility rates of 2.1 children per woman has been achieved. Meanwhile, the National Population Policy (NPP) – 2000 document clearly stated that population growth in India continues to be high on account of a demographic momentum and higher wanted fertility due to high infant mortality and unmet need for contraception.

India is still nowhere near a satisfactory solution of its population problem in spite of so much emphasis given on different programmes like Family Planning (FP), Family Welfare (FW), Reproductive and Child Health (RCH), National Rural Health Mission (NRHM) etc. At this crucial juncture, the study of fertility becomes of paramount importance for population control. In fact, human fertility depends on the duration of effective reproductive span and length of birth interval (Bonga-

Corresponding author:
N. Sanajaoba Singh
Directorate of Census Operations,
Porompat 795005, Manipur, India
Mobile: 09856085403
E-mail: biostatsana@gmail.com

arts and Potter 1983). The birth interval, especially closed birth interval, is composed of three major components namely, postpartum amenorrhoea (PPA), waiting time to conception and gestation. In one sense, the gestation is treated to be a constant duration while PPA is in fact a physiological process which varies in a complex fashion (Lantz et al. 1992; Nath et al. 1993; Clegg 2001; Awang 2003). The second component – waiting time to conception, defined to be the time interval between the resumption of menses after a pregnancy until the beginning of the next pregnancy, is highly influenced by socio-economic, demographic, cultural, and behavioural factors (Kathleen et al. 1989; Lantz et al. 1992; Rao et al. 2006; Singh et al. 2007). Despite its immense significance, no scientific community based research on this event, history of the waiting time to conception, has so far been taken up in Manipur. Keeping this in view, the present study is initiated to investigate the differential pattern of duration of waiting time to conception of women in four valley districts of Manipur with respect to various demographic, behavioural and socio-economic factors.

MATERIALS AND METHODS

Under cluster sampling scheme, a cross-sectional as well as community based study was conducted in four valley districts of Manipur namely, Imphal East, Imphal West, Bishnupur, and Thoubal. Utilizing a pre-tested and semi-structural interview schedule, the survey was completed during the period from December 2007 to June 2008 with the reference date of 1st December 2007. It comprises of 1225 eligible women having at least one live birth. An eligible woman is defined to be currently married during her reproductive life span. As the present study is confined in censored data, a survival analysis technique is carried out. Life table technique is utilized to estimate the survival distribution of the duration of waiting time to conception. This survival distribution is of the proportion of women not conceiving at 6, 12, 18, 24, 30, 36 and 42 months. Also, Log-rank test is employed to draw significant variability in the duration of waiting time to conception with respect to various elsewhere factors.

The response variable, say the duration of waiting time to conception, is taken subject to the last birth only to control data recall error. An eligible woman who conceives before the survey date is considered to be uncensored case. The duration variable is quantified by the time interval between end of PPA and date of conception. The time interval observed from the woman who does not conceive till the date of survey is considered to be censored case and the duration is the time interval between the end of PPA and the survey date. While collecting the duration data, the following conditions are followed. That firstly, when survey date falls during PPA following the first birth, then such data are omitted from the study; secondly, for the women having more than two live births, the last duration data are taken; and lastly if the survey date falls during the PPA just after second or whichever more birth, then the duration data are taken as that one just prior to the last birth. The explanatory variables or so termed as covariates are socio-economic, demographic and behavioural factors. The socio-economic variables include place of residence, caste, religion, educational level, employment status and family income. The demographic variables are age at marriage, sex of previous child, parity and infant mortality. The behavioural factors include lactation and practice of contraceptives.

RESULTS

The present finding shows that the median length of waiting time to conception of the study population was found to be 18 months, depicted in Table 1. It also highlights that about 12%, 30%, 31%, 46% and 37% of the women who have married during the age group of below 15 years, 15-20 years, 20-25 years, 25-30 years, and 30 years and above respectively do not conceive before 24 months after PPA. About 12%, 10%, 15%, 25% and 15% of women who have married during their age of below 15 years, 15-20 years, 20-25 years, 25-30 years, and 30 years and above respectively do not conceive before 36 months after PPA. By the Log-rank test, the variation in the median length of the event history of waiting time to conception according to age at marriage is highly significant ($\chi^2 = 25.37$, $P < 0.001$). It could also be examined that 58% of women having parity zero do not concei ve within 24 months after

Table 1: Life table of duration of waiting time to conception

Variables	*Proportion of not conceiving at months*							*Median*	*Log-rank test*
	6	*12*	*18*	*24*	*30*	*36*	*42*		
Age at Marriage of Husband (Years)									
15-20	.78	.57	.41	.33	.19	.16	.13	15.0	
20-25	.90	.73	.51	.30	.16	.11	.07	18.0	$\chi^2 = 6.649$,
25-30	.91	.72	.51	.35	.26	.16	.14	18.7	d.f=3,P>0.05
≥30	.89	.74	.54	.37	.23	.17	.14	18.9	
Age at Marriage of Wife (Years)									
<15	.85	.45	.24	.12	.12	.12	.12	9.8	
15-20	.87	.67	.47	.30	.16	.10	.06	16.8	$\chi^2 = 25.37$,
20-25	.90	.73	.52	.31	.19	.15	.12	18.7	d.f =4,P<0.001
25-30	.92	.77	.58	.46	.34	.25	.19	21.7	
≥30	.86	.74	.54	.37	.23	.15	.12	18.4	
Parity									
0	.93	.83	.73	.58	.46	.35	.31	27.0	
1	.92	.74	.54	.39	.21	.16	.13	18.8	$\chi^2 = 78.422$,
2	.85	.70	.46	.30	.18	.13	.10	17.0	d.f=4, P<0.001
3	.87	.61	.43	.28	.17	.10	.06	15.9	
4+	.86	.66	.39	.19	.11	.06	.04	15.7	
Sex of the Previous Child									
Female	.90	.71	.49	.32	.20	.12	.07	17.7	$\chi^2 = 7.306$,
Male	.88	.71	.52	.35	.21	.17	.14	18.7	d.f=1, P<0.05
Survival Status of Previous Child									
Death	.63	.47	.20	.10	07	03	.00	8.8	$\chi^2 = 26.901$,
Survived	.90	.72	.52	.34	.21	.15	.11	18.7	d.f = 1,P<0.001
Lactation(in month)									
<5	.87	.77	.55	.44	.27	.21	.15	21.0	
5-10	.89	.75	.58	.41	.26	.19	.16	20.0	$\chi^2 = 77.209$,
10-15	.80	.62	.51	.39	.30	.22	.15	18.0	d.f = 5,P<0.001
15-20	.91	.55	.25	.12	.07	.05	.03	13.8	
20-25	.94	.72	.47	.21	.11	.05	.03	17.1	
≥25	.96	.86	.65	.45	.28	.18	.13	23.8	
Use of Contraceptive Devices									
No	.85	.63	.38	.20	.11	.06	.04	14.8	$\chi^2 = 149.66$,
Yes	.94	.85	.71	.56	.38	.29	.24	26.0	d.f = 1,P<0.001
Place of Residence									
Urban	.88	.68	.49	.29	.18	.11	.07	17.8	$\chi^2 = 2.957$,
Rural	.89	.72	.51	.35	.22	.16	.13	18.1	d.f = 1, P> 0.05
Religion									
Hindu	.92	.75	.54	.37	.25	.19	.14	19.0	
Meitei	.92	.73	.47	.25	.11	.04	.01	17.3	$\chi^2 = 31.361$,
Muslim	.76	.53	.39	.30	.10	.06	.04	13.7	d.f = 3,P<0.001
Christian and others	.85	.67	.47	.32	.21	.14	.12	16.5	
Caste									
General	.89	.71	.51	.33	.20	.13	.09	18.0	
Schedule caste	.92	.76	.55	.38	.28	.23	.18	19.7	$\chi^2 = 2.955$,
Schedule tribe	.87	.67	.48	.31	.20	.13	.11	16.8	d.f = 2, P> 0.05
Educational Level of Husband									
No schooling	.72	.54	.37	.22	.08	.06	.06	13.8	
Primary school	.81	.60	.46	.38	.24	.14	.09	16.0	$\chi^2 = 34.067$,
Secondary school	.89	.69	.48	.29	.19	.12	.08	17.0	d.f = 4,P<0.001
Higher secondary school	.94	.80	.55	.37	.25	.19	.15	19.0	
College and university	.90	.76	.57	.43	.27	.20	.16	20.8	
Educational Level of Wife									
No schooling	.87	.63	.39	.24	.14	.08	.06	15.7	
Primary school	.70	.70	.70	.70	.25	.25	.00	16.0	$\chi^2 = 38.542$,
Secondary school	.90	.71	.50	.31	.20	.14	.10	18.0	d.f = 4,P<0.001
Higher secondary school	.91	.81	.61	.43	.25	.18	.16	22.0	
College and university	.88	.77	.62	.51	.33	.25	.21	24.0	
Employment Status of Husband									
Unemployed	.89	.77	.63	.48	.32	.25	.18	23.0	$\chi^2 = 48.123$,
Employed	.89	.67	.43	.25	.15	.09	.07	16.0	d.f = 2,P<0.001

Table 1: Contd.....

Variables	*Proportion of not conceiving at months*							*Median*	*Log-rank test*
	6	*12*	*18*	*24*	*30*	*36*	*42*		
Employment Status of Wife									
Unemployed	.89	.71	.50	.33	.21	.15	.11	18.0	$\chi^2 = 0.200$,
Employed	.89	.72	.53	.35	.22	.13	.10	18.8	d.f = 1, P> 0.05
Family Income (in Rs.)									
<2000	.88	.60	.36	.19	.08	.05	.03	13.8	
2000-4000	.91	.76	.53	.33	.22	.15	.11	18.7	$\chi^2 = 58.035$,
4000-6000	.89	.73	.57	.41	.23	.18	.14	21.0	d.f = 5,P<0.001
6000-8000	.89	.67	.51	.41	.27	.14	.11	19.0	
8000-10000	.91	.82	.63	.46	.31	.28	.18	20.8	
≥10000	.82	.75	.66	.56	.39	.29	.27	26.0	
Overall								18.0	

the PPA in the study population. On contrary, 39% of women having parity one, that of 30% of parity two, 28 % of parity three and 19% of parity four and above do not conceive within 24 months after their PPA. The median length of the time to conception decreases with the increase in parity and this variation is highly significant in the study population irrespective of other covariates (P < 0.001). About 32% of women with female as the previous child do not conceive within 24 months while 35 % of women with male as the previous child do not conceive within 24 months. The median length of the time to conception for women with male as the previous child is significantly longer than those with female (P<0.05). While only 10% of women who have experienced the death of previous child during infancy do not conceive before 24 months after PPA, a higher proportion of women (34%) with the survival of previous child do not conceive during the same period of time and the variation in the median length of waiting time to conception according to the survival status of previous child is found to be highly significant ($\chi^2 = 26.90$, P<0.01).

About 44% of women who practice breast feeding below 5 months do not conceive within 24 months after PPA. Also, about 41% of women who practice breast feeding for 5-10 months, about 39% of women who breastfed for 10-15 months, 12% of women who practice breast feeding for 15-20 months and about 21% of women who practice breast feeding for about 20-25 months and about 45% of women who practice breast feeding for 25 months and above have not conceived within the period of 24 months after PPA. Utilizing Log-rank test ($\chi^2 =$ 77.209, P<0.001), the duration of breast feeding has highly significant effect on the duration of waiting time to conception at 0.01 probability level. It may be noted that about 20% of women who do not use any forms of contraceptive devices do not conceive within 24 months after PPA; and that 56% who use contraceptives of any forms do not conceive within the period of 24 months. The variation in the duration of waiting time to conception with respect to the use of contraceptive devices by the couple is highly significant (P<0.001).

About 37 % of Hindu, 25% of Meitei, 30% of Muslim, and 32 % Christian and others religion women do not conceive before 24 months after PPA and the difference in the median length of waiting time to conception by religion is found to be highly significant (P<0.001). About 43% of women whose husbands have the educational level of college and university have not conceived within 24 months after PPA whereas around 22%, 38%, 29%, and 37% of women whose husbands have no schooling, primary education, secondary education and higher secondary school respectively have not conceived within 24 months. On contrary, about 51% college and university level women have not conceived within 24 months after PPA whereas 24% of women with no schooling and 70 % of women with primary school level, 31% of women with secondary school level and 43 % of women with higher secondary level have not conceived within the 24 months. The variation in the median duration of waiting time to conception according to educational level of couple is an upward linear trend which is again found to be highly significant (P<0.001). About 25% of women whose husbands are em-

ployed do not conceive within 24 months after PPA while 48% of women whose husbands are unemployed do not conceive within 24 months after PPA. The variation in the median length of waiting time to conception with respect to employment status of husbands is statistically significant ($P<0.001$). Only 19% of women having income of below Rs. 2000 do not conceive within 24 months after PPA. But 33 % of the study subjects having family income of Rs. 2000-4000, 41% in the income of Rs. 4000-6000, 41% in Rs. 6000-8000, 46% in Rs. 8000-10000 and 56 % in Rs. 10000 and above do not conceive within the same period. The variation in the median duration of waiting time to conception with respect to family income is highly significant even at 0.01 level of probability.

DISCUSSION

From the present interpretative analysis, the median length of waiting time to conception is found to 18 months. The similar figure estimated from Malaysian women was also observed two decades back (Vanlaldingham 1993). Also, the median birth interval in India is found to be 31 months according to National Family Health Survey (NFHS) - Report 2007. In one sense the average duration of post partum amenorrhea calculated from the present data is about 6 months so that the median duration of waiting time is observed to be 16 months, considering the gestation period of 9.3 months. Thus, the present finding shows the duration of waiting time is longer than that of all India figure. A green sign could be detected for population control in the state of Manipur owing to the advancement of two months in the waiting time to conception in comparison with the all India figure. The sex of index child can be regarded as the determinant of waiting time to conception. The longer duration of waiting time to conception among women having a son as index child may be due to the fact that in India, parents have put typically highly value on son since he is treated as an economic asset and old age assurance as well as the bearer of the family name, it is therefore less likely that they (parents) will accept contraception or other methods of fertility control until they have had the desire number of sons. This view is incorporated with the findings of Chakraborty et al. (1996), Basso et al. (2000), Awang (2003), Youssef (2005), Singh et al. (2007). The death of previous child during infancy limits the duration of time to conception through emotional feeling of the couples. An infant death may exert a psychological pressure on parents to make up the lost child as early as practical by avoiding the use of contraceptives and other means of fertility control that they would otherwise have used. And also the death of the infant and young child interrupts breastfeeding leading to an early return of ovulation. It is also in agreement with the findings of Dissanyake (2000), Baschieri and Hinde (2007), Singh et al. (2007), Singh et al. (2010). Educational level of husband is positively associated with the risk of conception. It may be thought to be caused by the fact that educated husbands are employed more than uneducated ones as a result of which they tend to have good economic conditions. As they are economically sound, they can take care of their health as well as the health of their wife and offspring. This leads to decrease in maternal and child mortality rate which is considered as a very important determinant in the duration of time to conception. Educated husbands also have knowledge about the methods and importance of family planning programme. The present finding is in conformity with some previous findings of Chakraborty et al. (1996), and Nahar and Rahman (2006). Hindu women have higher income coupled with better education and occupation which further leads to more practice of contraceptive devices. On the other hand, Muslims generally are socio-economically poor strata, have less educated with strong polygamy. Besides, they have less strict observance of abstinence and religious celibacy. So, the duration of waiting time for Hindu women is the longest and the duration is the shortest for Muslim women. This finding is in line with the past findings of Gray and Evan (2004), and Singh et al. (2007).

Identifying the factors influencing the dynamics of waiting time to conception, the policymakers, health planners and service providers may promote the status of elsewhere significant factors which are lacking behind the targets to achieve the national goal for fertility reduction, specifically to replacement level of 2.1 and also to provide the public facilities to the backward sections in the study population.

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