

Socio-Demographic Factors on the Last Birth Interval of Manipuri Women

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Abstract

Objective: The general objective is to study the impacts of various socio economic and demographic factors on the dynamics of last birth interval of the Manipuri women. **Methods/Analysis:** 1452 eligible women having at least two pregnancies in her life time were selected with the help of stratified random sampling with proportional allocation at four districts of Manipur valley. The collected data were analyzed with the statistical tools like ANOVA one way and Cox's proportional hazard model. **Findings:** By applying ANOVA one way, age at marriage of wife ($F=2.038$), parity ($F=2.089$) and Islamic religion ($F=4.061$) were found significant at 5 percent and 1 percent. In case of Proportional hazard model, only source of income and Islamic religion were found significant at 5 percent and 1 percent without controlling the effects of others. The finding will be useful in providing base line information to the researchers and planners. **Improvement/Application:** Few of the women in the study marry too early or too late. So, it is required to give awareness about the disadvantages of early as well as late marriage. Meanwhile, women of Islamic have short birth interval. It is also required to give health awareness to the eligible women. There is need for in-depth research in this field also.

Keywords: Birth Interval, Demographic Factors, Socio-Economic

1. Introduction

In order to investigate the nature of human fertility, there are a number of methods and one of them is the study of birth interval. The number of births of a woman would certainly have occurred during the effective reproductive period of her life span and the effective reproductive period is the sum total of her birth intervals including incomplete birth intervals. Thus, the nature and pattern of birth intervals of a population may highlight the salient feature of fertility of that population.

In spite of so much emphasis given by the Government of India for family planning programs for the last five decades, Manipur particularly rural population is still nowhere near a satisfactory solution. Many studies have highlighted the extent of awareness of family planning methods and reasons for acceptance as well as non acceptance of family planning methods. However, certain unique features in acceptance of family planning by the couples were not clearly mentioned. The findings of the proposed study may be immense value particularly in

population planning and health policy through which an attempt may also be made to improve the socio economic status of rural community resulting into better way of life. No extensive work has so far been taken up in the study population. In this view, the present work is proposed to initiate in order to investigate the nature and pattern of socio-demographic influence on the last birth interval.

2. Objective

The general objective is to study the impacts of various socio-economic and demographic factors on the dynamics of last birth interval of the Manipuri women. The specific objectives of the study are - to determine the variation of the last birth interval with respect to demographic factors viz., age at marriage, age at delivery and parity etc. socio-economic factors viz., educational qualification of husband and wife, source of income etc. - to determine to find out the relative effects of covariates of last birth interval by applying Cox's Proportional Hazards Survival regression.

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3. Methodology

The present study is conducted in the four districts of Manipur, viz., Imphal East, Imphal West, Thoubal and Bishnupur districts. Geographically it is the 9 percent of the total area 22327 sq. km and remaining area is hilly terrain. 60 percent of the population resides in these four districts. Muslim community is the next to the majority group Meitei in the valley area among the different religion in the state. Although few tribal groups reside in the valley area they mostly live in hilly areas. The sample size 1452 eligible women is fixed on the basis of past finding, say mean+SD = 27.98+13.60 under the condition 95 percent degree of precision with 2.5 permissible error to the mean closed birth interval. Samples are selected with stratified random sampling with proportional allocation to each stratum as a sampling technique treating each constituency as a stratum for the purpose. Analysis is done with the statistical tools ANOVA one way and Cox's Proportional hazard survival model.

One's age at the time of marriage is termed as "age at marriage". It plays an important role on birth interval dynamics. A distinction is made between a girl's age at her wedding ceremony and the beginning of her marital relation. When a girl is married several years after menarche, nuptial ceremony (commonly called Gauna or Vida) is usually performed and thereafter they begin regular marital relation. The time of nuptial rites takes the consumption of the union and represents the date of effective marriage. Fortunately, in the present study, age at marriage can be treated as effective marriage date because there is no another nuptial ceremony after the wedding ceremony in the study population of Manipur. The past findings suggested that to rise the age at marriage

of female spouse as a measure of fertility control has led to a fruitful study of the quantitative reduction in birth rate. It may be due to by increasing marriage age of girls, natural reproduction span is cut down and therefore fertility would be reduced proportionately. Couples who marry late have got short effective reproductive period. So they try to compensate their lost reproductive period by producing the desire number of children quickly. This leads to short birth interval¹. The raise in marriage age acts not only the interval between effective marriage and the first birth but also the closed birth interval. It is seen from the Table 1 that the variation in the average closed birth interval is significant as evidenced by analysis of variance, 2.038. It is significant at 5 percent level of significant.

Age at delivery for a particular birth interval is the age of the mother at the onset of that particular birth interval. As the fertility is age dependent, it may have some impact on post-partum amenorrhea. Naturally, fetal wastage and fecundability decline if the mother's age becomes higher and higher. Waiting time to conception may vary from society to society and within society itself. It may also vary from one woman to another woman. But fertility regulation may be based on the appropriate age range of childbearing. In fact, in advancing age, fetal wastage is higher and possibly fecundability decline in older age group. In this view, closed birth interval may also be higher as the age of mother attributing to the mean ovulatory exposure is increased in one hand but coital frequency is reduced on the other. Thus the age at delivery may have some unavoidable impact on birth interval dynamics. Many research findings emphasize that the average closed birth interval tends to increase with the age irrespective of other factors. In the present research finding, the differentiation of closed birth interval, the average intervals vary insignificantly ($F=1.067$, $P>0.05$). That is, age at delivery of mothers has no significant impact on the dynamics of the last closed birth interval.

Different scholars have illustrated slight different ideas on the effect of parity on birth interval. National sample survey 17th round depicted that the birth interval shortens at higher parity. This is contrary to the western view that the period of interval lengthens as the women approaches menopause, because of higher incidence of fetal wastage and lowering of fecundability with maternal age. Most of the scholars emphasize that the birth interval is more or less independent of parity². The variation in birth interval is analysis according to parity in the study population. This variation is found significant at 5 percent level of significant (2.089, $P<0.05$).

Table 1. The variation of the last birth interval with respect to demographic and socio economic factors

Sl. No.	Factors	Test Value	P values
1	Age at marriage of wife	2.038*	0.035
2	Age at delivery	1.067	0.261
3	Parity	2.089*	0.045
4	Educational qualification of husband	0.643	0.673
5	Educational qualification of wife	1.731	0.1.98
6	Source of Income	0.224	0.894
7	Religion	4.061**	0.005

Different couples have different ideas to achieve the desired birth spacing between two consecutive children. These ideas can easily be seen between the husband and wife also. It is witnessed from the past literatures that higher education is associated with late marriage and then late marriage is again associated with short waiting time to conception to some extent. Most of the educationally qualified spouses want a few numbers of children and desire to keep long interval between the two consecutive children. Past findings have emphasized that the level of educational achievement has some non trivial roles towards the dynamics of birth interval. There is no specific trend with increasing period of breastfeeding. However, within each category, there is an increasing trend in not having next child probability in relation to increasing education of women. Women's high school (and above) education was noticed to provide maximum benefit. This is in further evidence if women have a surviving index child³. Here in Table 1, the impact of educational achievement on birth interval has been discussed according to educational level of husband and wife separately. The educational level is quantified by their number of completed years in education. In the case of educational level of husband, the variation in the interval is insignificant ($F=0.643$, $P>0.05$). The shortest birth interval can be seen in the higher qualification in the case of educational qualification of wife. Because, most of the women having higher qualification marry lately. They try to get their desire children quickly. However, there is no significant between the means which shown by ANOVA test ($F=0.643$, $P>0.05$).

Here, the source of income means the total income obtained by the whole family members from all sources of a family. Income from cultivation, daily wages, monthly salaries, business etc. is included in the source of income. Some recent findings also emphasis that there exists an inverse relationship between income and birth interval⁴. It may observe that income level of a couple has a linkage with their educational achievement and employment status. Educational level and employment status of women have certain roles on the regulation of post-partum amenorrhea as which may be either a direct or indirect factor. Many empirical studies conducted in India, on the relationship between income and fertility highlight that increase in income level tends to depress fertility at an early stage in certain cases and at a later stage on other cases⁵. In this view, it is to examine the variability on the duration of birth interval with respect to source of income in the study population. In this analysis, the

family source of income is insignificant even at 5 percent ($F=0.224$, $P>0.05$). It may be concluded that source of income has no impact on birth interval in this research. It is also in agreement with the finding of Singh. He agreed with the fact that higher level of economic prospects may be resulted due to the factors like better educational attainment and higher age at marriage⁶.

The women's contraceptive practices including social for women to prove their fertility are influenced by different religions, cultural norms and customs. Couples who face pressure for childbearing from their families or society want to have their first child soon after marriage and continue to have children rapidly. In this context, it is proposed to analyze the variation in closed birth interval with respect to religion. The study is classified into four groups viz., Hinduism, Meiteism, Christianity and Islamic according to their religion. Thus the variation in means of birth interval which is differentiated by religion is shown. It may be observed from the table that the longest interval is found in Hinduism. Analysis of variance one way is applied and is found as 4.061 which is highly significant ($P<0.01$). It may be concluded that the closed birth interval is highly influenced by religion in the population irrespective of other determinants. This highly result is thought to be caused by Islamic religion. In one sense most Islamic couples do not practice post partum sexual abstinence and tending to have their next conception quickly. Post partum abstinence is however common in many countries. When the length of such abstinence exceeds the length of post-partum amenorrhea, this can help women delay their next pregnancy. Recent findings that the more educational level that couples achieves, the more likely they are to use contraception⁶. The wider spacing among these groups has obvious consequences for completed family size and reproductive health. Child spacing has been found to play an important role in fertility transition as a result of its inverse relationship with completed family size⁷.

3.1 The Effects of Factors on the Last Birth Interval by Applying Cox's Proportional Hazards Survival Regression

The general form of the Hazard model is

$$l_x(t) = l_0(t) C_x(t)$$

where $l_0(t)$ denotes a baseline hazard function, x denotes a set of characteristics and $C_x(t)$ is a multiplier specific to person with the set of x of characteristics.

The model can be written as

$$l_x(t) = l_0(t) C_x$$

so that the multiplier C_x is constant over time, then the model is called a proportional hazard model with $l_x(t)$ proportional to $l_0(t)$ and C_x the constant of proportionality.

The findings of closed birth interval according to various socio economic and demographic factors on the dynamics of last birth interval of the Manipuri women by utilizing univariates are explained in Table 2. The factors viz., age at marriage, age at delivery, parity, educational qualification of husband and wife, source of income respectively are involved to study closed birth interval. Educational level of husband, source of income and religion on Islam are influencing factors on the last closed birth interval in the study population at 5 percent level of significant. However, the results are drawn on the basis of bivariate analysis without controlling the effects of other explanatory variables which might joint effect on the considered variables. In this view, the multivariate analysis is initiated to investigate the causal effects of elsewhere explanatory variables in isolation by controlling or adjusting the effects of others. The results of the analysis (applying Cox's Proportional Hazard regression model) are interpreted by using β -coefficients with their Standard Error (SE), P-values and Relative Risk (RR) with 95% CI.

In this case, closed birth interval is taken as response variable. It consists of seven explanatory variables of which six are quantitative in nature and remaining one is categorical. They are age at marriage, age at delivery, parity, educational qualification of husband and wife, source of income and religion of Islam and Hindu. This analysis is to assess the relations between the duration of closed birth interval and the seven explanatory variables. Besides, it has also observe more precise estimates of the hazard of being short closed birth interval which is caused by any variable of interest with or without adjustment of other explanatory variables.

In this analysis, the response variable is closed birth interval of last live birth measured in terms of months. The explanatory variables are age at marriage of husband which is indicated by AMH, Age at Marriage of Wife-AMW, Age at Delivery – AD, Parity – PT, Educational Qualification of Husband – EDH, Educational Qualification of Wife – EDW, source of Monthly Income – INC, Hindu Religion – RELH, Islam Religion – RELI.

Table 2. Cox's Regression analysis (unadjusted) of last birth interval with respect to the explanatory variables

Factors	β -coeff (S.E.)	P-values	Exp(β) with 95% C.I.
AMH	-0.0134 (0.0076)	0.6322	0.9869:0.9685–1.0054
AMW	0.0273 (0.0087)	0.2768	1.0254:0.9545–1.1065
AD	-0.0087 (0.0075)	0.5246	0.9923:0.9217–1.0568
PT	0.0578 (0.310)	0.1437	1.0618:0.8803–1.2433
EDH	0.0131(0.0083)	0.1337	1.0122:0.9897–1.0367
EDW	-0.0123 (0.0076)	0.4960	0.9876:0.9765–1.0085
INC	0.0024*(0.0013)	0.0125	1.4980:0.9883–1.0075
RELH	0.1738(0.0909)	0.3192	1.1899:0.9350–1.5134
RELI	0.4560**(0.1248)	0.0055	1.5777:1.1200–2.2226

Utilizing the PH-model, there are nine classified regression coefficients (β) of the six explanatory variables which is quantified by P values of the test statistics and exp(β)-relative risk. The present analysis is done by the method of enter without adjustment. Two factors have been identified to have their significant causal effects on the variation of the last closed birth interval. They are INC ($P < 0.05$) and RELI ($P < 0.01$). Islamic religion has high significant impact on the variation on birth interval. A 58 percent more risk on the hazard of short interval is observed in Islam religion than that of others irrespective of other explanatory variables.

4. Conclusion

The present empirical study takes the initiative to investigate the birth interval of last birth residing in rural area of Manipur. Birth interval is found extensively with the characteristics of eligible couples in the study population. The characteristics considered in the present study are demographic and socio-economic factors. These factors consist of age at marriage of husband and wife, age at delivery, parity, educational qualification of husband and wife, source of income, religion of Islam and Hindu. The findings arrived at in the present interpretative analysis highlight useful information in isolation and identification of risk factors of short birth interval leading to high fertility. This information also provides a proper guide line in implementing the reproductive and child health programed particularly for those sections of couples who have been identified as sensitive or so called target group. The study may be helpful and useful in providing base line information to the future research workers who are working in this interesting field of human research. The

findings arrived at in the present study are very interesting, useful and revealing. In the present empirical study, the last closed birth interval varies with various demographic and socio-economic factors. When the classical test ANOVA one way is applied, it is found to be significantly influenced by age at marriage of wife ($F=2.038$, $P<0.05$), parity ($F=2.089$, $P<0.05$) and Islamic religion ($F=4.061$, $P<0.01$) respectively. Utilizing the PH-model, two unadjusted factors out of six explanatory ones have identified to be significant on the birth interval. The influencing factors are source of income ($P<0.05$) and Islam religion ($P<0.01$). These two significant results are obtained without controlling the effects of others so that their effects could not be interpreted in isolation due to joint effect of others.

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