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Affecting Factors on Waiting Time of Conception in Manipuri Women

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ABSTRACT The objective is to determine the factors affecting waiting time for conception of Manipuri women residing in the valley area of Manipur and their interrelations with respect to various factors such as socio-economic, demographic and behavioral attitudes. 1,008 eligible women having at least two life births in her lifetime were selected with the help of cluster sampling in four districts. The collected data was analyzed with the statistical tools like t-test, ANOVA one-way test and Cox's Proportional Hazard model. By applying classical tests, age at marriage of wife, death of previous child, sex of previous child, use of contraceptive devices and religion were found to be significantly different. Lactation, death of previous child, religion (Hindu), desired number of sons, and sex of previous child are also significant in case of Cox's regression analysis.

INTRODUCTION

The World Health Organization (WHO 2005) recommended that the birth spacing before attempting a second or next pregnancy is at least 24 months and at least six months after an abortion in order to reduce the risk of adverse maternal, perinatal and infant outcomes. However, women with no formal education are more likely to report their last birth as unintended as compared to women with some formal education (Yohannes 2010). Mass media exposure and social networks play important roles to spread knowledge about modern techniques. Women, who regularly watch TV, listen to the radio, or read newspapers and magazines are more likely to be exposed to contraceptive related information and hence have more knowledge of contraceptives (Majumder 2015). In a closed birth interval, waiting time to conception is highly influenced by various factors (Sharat et al. 2007). The duration of waiting time to conception may be composed of one or more menstruation cycles. This duration is the only component of birth interval, which can be controlled both by deliberate action and behavioral effect of couples. Here, an attempt is made to find out the affects of waiting time on conception with respect to various factors.

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Objectives

The objective of the study is to find the factors affecting waiting time to conception for women residing in the valley areas of Manipur with respect to various factors.

MATERIAL AND METHODS

In the study, 1008 eligible women having at least two pregnancies in their lifetime were selected with the help of cluster sampling from four districts namely, Imphal East, Imphal West, Thoubal and Bishnupur of Manipur valley. The cross sectional study design is based on the community. Samples are collected with a pre-tested and semi-structural schedule from 1st August 2014 to 25th February 2015. The sample size is fixed on the basis of past findings, say mean $\pm$SD = 27.98 $\pm$ 13.60 months under the condition ninety-five percent degree of precision with three percent permissible error to the mean birth interval. The eligible women must have not had less than two live births. The statistical tools like t-test and ANOVA one-way, and Proportional Hazard model (PH-model) introduced by Cox in 1972

has been carried out through SPSS in the collected data. The results are expressed in terms of β-coefficients, standard error (S.E.), p-values and relative risk.

Model Formulation

The simple form of the model is,

$h(t, Z) = h_o(t)Y(z)$,

Where $h_o(t)$ is the base line failure rate and Y(z) is a parametric link function bringing in the covariates. It satisfies $Y(0) = 1$ and $Y(z) \geq 0$ for all z. The commonly used form of z is $Y(z) = Y(z, \beta) = \exp(\beta , z)$ known as the "log linear form". For the individual with covariate vector z, the hazard function h(t, z) can be represented as $h(t, Z) = h_o(t) \exp(\beta, z)$ so that the relation: $h(t, Z) / h_o(t) = \exp(\beta, z)$ shows the relative risk of failure. Further, $\log[h(t, Z)/ h_o(t)] = (\beta, z)$ is the linear regression model and hence, the name "log linear model". Since the regression coefficients are constants and its covariates are fixed, then the hazards h(t, z) and $h_o(t)$ are proportional and it is known as the Proportional Hazards model.

This model involves examining the coefficients for each explanatory variable. For continuous variables, the parameter â denotes the effect of a unit change in the independent covariate on the log of the hazard rate, after adjusting the other variables. For categorical covariate, â represents the deviation of a specified group from the hazard of the reference groups. The exponential of the coefficients, exp (β) also uses to express the hazard of a specific group as a proportion of the baseline hazard.

The response variable is the duration of waiting time to conception. It is continuous time variable measured in months. The explanatory variables are age at menarche represented by AME, age at marriage of husband (AMH), age at marriage of wife (AMW), availability of separate room (ASR) (1: yes and 0:otherwise), age at delivery of previous child (DA), death of previous child (DPC) (1: if death and 0: otherwise), desired number of daughters by husband (DDH), desired number of daughters by wife (DDW), desired number of sons by husband (DSH), desired number of sons by wife (DSW), educational level of husband (EDH), duration of marriage (DOM), educational level of wife (EDW), employment status of husband (ESH), employment status of wife (ESW), income (INC), lactation (LAC), number of living daughters at present (ND), number of living sons at present (NS), parity (PT), religion (RELH) (1: if Hindu and 0: otherwise), sex of previous child (SEX), and use of contraceptive devices (UCD) (1: if used and 0: otherwise).

RESULTS

The present study section attempts to represent the nature and pattern of mean waiting time to conception according to age at marriage of women. Here, women have been classified into five groups according to their age at marriage. The shortest mean waiting time of 19.26 months is observed from those women who marry after 30 years of age and above and longer mean 28.40 months is seen as those women who marry at 20-25 years in Table 1. These differences can be seen by the value of $F = 2.867^*$ ($P<0.05$). It may be concluded that age at the time of marriage of wife has a significant impact on the regulation of waiting time to conception in the study population.

The death of previous child during infancy has an impact on subsequent waiting time to conception in many past findings. The present finding in Table 1 shows that the mean waiting time from the previous child's death is 9.39 months, which is significantly smaller than that if the child survived, which is 21.60 months. By utilizing a t-test, it is found to be 3.846 ($P<0.01$). Thus, it may be concluded that infant mortality has a highly significant impact on the dynamics of waiting time to conception in the study population. Sex preference is one of the resulted impacts of social organization, family structure, economic liability, religious belief and tradition of the society. Table 1 shows that when the previous child is male the mean waiting time is 22.60 months and when the previous child is female the mean waiting time is 19.68 months. When a t-test is applied, it is found to be 3.846 ($P<0.01$). It means that sex preference plays an important role in the dynamics of waiting time to conception.

An effort has been made to analyze the variation of mean waiting time according to lactation. It is categorized into five groups, such as 0-10 months, 10-20 months, 20-30 months, 30-40 months, and 40 months and above, respectively. The variation is found to be highly significant ($F=12.574$, $P<0.01$). It is seen that the waiting time can be increased if the lactation period increases (Hemochandra 2008). Table 1 shows

Table 1: The waiting time to conception with respect to different factors

S. No. Factors	*No. of cases*	*Mean ± SD*	*Test values*	*P values*
1 *Age at Marriage of Wife*				
< 15	59	26.40± 16.66		
15 - 20	314	26.86± 11.79		
20 - 25	346	28.40± 13.05		
25 -30	185	25.27± 11.38		
30+	104	19.26± 5.04	F = 2.867*	0.022
2 *Death of Previous Child*				
Child death	22	9.39 ± 9.17		
Child survived	986	21.60 ± 16.45	t = 3.846**	0.000
3 *Sex of the Previous Child*				
Male	533	22.60± 17.15		
Female	475	19.68± 15.52	t = 2.422*	0.016
4 *Lactation*				
0-10	121	10.81± 10.17		
10 – 20	234	16.53± 18.30		
20 – 30	268	20.11± 10.58		
30 - 40	253	24.00 ± 12.52		
40+	132	26.91± 18.84	F=12.574*	0.000
5 *Use of Contraceptive Devices*				
Yes	463	23.91± 17.32		
No	545	20.37± 15.95	t =1.991*	0.047
6 *Religion*				
Islam	138	16.73± 9.07		
Meiteism	215	20.86± 10.40		
Hinduism	501	22.63± 13.20		
Christianity	154	21.39± 12.54	F=2.061**	0.005

*indicates significance at 5% proability level, **indicates significance at 1% probability level

that the couple that uses contraceptive devices has a longer mean waiting time than those do not. The mean waiting time of 23.91 months is observed when the couples use contraceptive devices and it is found to be 20.37 months when the couples do not use contraceptive devices. A variation can be seen by using the t-test (t =1.991, P<0.05). Nowadays, use of contraception becomes more acceptable and women who want to space their births begin to use it as well. The present findings have also expressed that there are some non-trivial impacts of contraceptive use on the dynamics of waiting time to conception.

With regards to the religion, the population is categorized into four groups, such as Hinduism, Meiteism, Christianity and Islamic. The variation in waiting time to conception is differentiated in Table 1. It is found that Hinduism has the longest waiting time, which is followed by Christianity. The shortest waiting time of 16.73 months exists in Islamic religion. By using the ANOVA test, it is found to be 2.061, which is not significant at a five percent level of significance.

Applying the Enter method, the researchers have twenty-four classified regression coefficients (β) of the sixteen explanatory variables with their proper classifications, which are quantified by p-values of test statistics and exp(β), that is, relative risk. Four statistically significant and three other highly significant coefficients are found, which are shown in Table 2. After adjusting the effects of other explanatory variables, the age at menarche has a significant impact on the duration of waiting time to conception, which is advocated by β - coefficient (0.0485, P = 0.0467). The death of the previous child during infancy provides highly significant contribution in reducing WTC after adjusting the effects of other explanatory variables (β= 0.9771, P = 0.0001).

Notwithstanding, the desired number of sons by wife has more contribution of a short duration of WTC than that of her counterpart (β_{DSW}= 0.2951, P=0.0096 and β_{DSH} =-0.0525, P = 0.6252). Such contribution is highly significant at 0.01 probability level. The value of exp(β) say 1.3432 with 95 percent CI, 1.0745-1.6790 generates the fact that each increase in the desires number of sons results in a 34.3 percent decrease in the duration of WTC leading to high fertility level. The educational level of wife has some

Table 2: Cox's Regression analysis of waiting time to conception with respect to different factors

Factors	â *-coeff. (S.E.)*	*P-values*	*Exp (â) with 95% C.I*
AME	0.0485*(0.0244)	0.0467	1.0497: 1.0007-1.1010
AMH	0.0104 (0.0096)	0.2779	1.0104: 0.9917-1.0296
AMW	0.0523(0.0415)	0.2079	1.0537: 0.9713-1.1431
ASR	-0.0285 (0.0857)	0.7397	0.9719: 0.8216-1.0334
DA	-0.0484 (0.0415)	0.2432	0.9527: 0.8784-1.0334
DDH	-0.0478 (0.0843)	0.5701	0.9533: 0.8082-1.1245
DDW	0.0113(0.0814)	0.8893	0.0114: 0.8623-1.1863
DOM	0.0499(0.0409)	0.2223	1.0512: 0.9702-1.1390
DPC	0.9771** (0.2448)	0.0001	2.6566: 1.6441-4.2928
DSH	-0.0525 (0.1074)	0.6252	0.9489: 0.7688-1.1712
DSW	0.2951** (0.1139)	0.0096	1.3432: 1.0745-1.6790
EDH	-0.0105 (0.0116)	0.3645	1.3432: 0.9673-1.01123
EDW	0.0256*(0.0106)	0.0155	1.0259: 1.0049-1.0478
ESH	-0.0482 (0.1238)	0.6972	0.9530: 0.7477-1.2146
ESW	0.0574(0.3125)	0.8543	1.0591: 0.5740-1.9541
INC	-0.0031(0.0020)	0.1250	0.9969: 0.9929-0.0009
LAC	-0.0325** (0.0027)	0.0000	0.9680: 0.9630-0.9731
ND	0.0859(0.0989)	0.3854	1.0897: 0.8976-1.3229
NS	0.1082(0.1002)	0.2798	1.1143: 0.9157-1.3560
P T	-0.0771 (0.0926)	0.4049	0.9258: 0.7721-1.1101
RELH	-0.2434*(0.1228)	0.0475	0.7809: 0.6132-0.9943
RELI	0.0389(0.1809)	0.8297	1.0298: 0.7195-1.4740
SEX	-0.2283*(0.0896)	0.0108	0.7959: 0.6677-0.9487
UCD	-0.1438 (0.0814)	0.0779	0.8663: 0.7385-1.0161

*indicates significance at 5% probability level, **indicates significance at 1% probability level
SE = Standard Error, CI = Confidence Interval

impact on WTC in such a way that a higher educational level is significantly associated with lower duration of WTC as witnessed by its coefficient 0.0256 and p-value 0.0155 (exp(β) = 1.0259 with 95% CI = 1.0049-1.0478). The association might perhaps be linked with age at marriage whose effect is already adjusted at a certain value.

In case of lactation, it is noted to be providing a very highly significant contribution as evidenced by its coefficient -0.0325 with $p < 0.001$. The exp (β) value at 0.9680 also suggests that each one month increase in lactation, can pull 3.2 percent increase in the duration of WTC with 95 percent CI = 0.9630-0.9731. In Table 2, the duration of WTC is found to vary significantly according to different categories of religion in the present study. It is significantly larger in the Hindu category than that of Islam and Christian as quantified by β -value (-0.2434, P = 0.0475). 21.6 percent more risk on the hazard of short duration can also be observed in Islam and Christian religious groups than that of Hindu religion (exp(β) = 0.7809 with 95% CI = 0.6132-0.9943) after adjusting the other explanatory variables under study. The sex of the previous child also plays a significant role in the variation of WTC. If the sex of the previous child is male the duration of WTC has an increasing tendency. It is significant at 0.05 probability level (β = -0.2283, P = 0.0108). The finding also advocates that 20.41 percent more risk in the duration of WTC if the sex of previous child is female than that of its male counterpart (exp(β) = 0.7959 with 95% CI = 0.6677-0.9487) in Table 2.

DISCUSSION

From the findings, the researchers may discuss as follows. It shows that one year increase in age at menarche yields 0.05 times in shortening the duration of WTC that is increasing the log hazard, which brings a five percent increase the risk or hazard of being closed in the duration as evidenced by exp(β)-value, 1.0497 with ninety-five percent confidence interval (CI) = 1.0007-1.1010. The age at marriage and waiting time to conception have an inverse relationship. It means that if the age at marriage of wife increases the mean waiting time to conception decrease. Because the persons who marry late have a tendency towards quick childbearing and they try to compensate their lost reproductive period towards getting a number of descendants dur-

ing their life span. This is supported by Hemochandra et al. (2013).

If an infant dies, couples tend to have their next child sooner than if the child survives. The short waiting time may be caused by psychological and emotional pressure of couples to replace the dead child quickly, which is also supported by Gyimah (2002). This mortality status explores that the death of a previous child during infancy has more risk in shortening WTC than that of the child alive till one year. The high risk marks one hundred and sixty-six percent ($\exp(\beta) = 2.6566$, 95% CI = 1.6441-4.2928). It is supported by Sharat et al. (2007). In most studies conducted in developing countries, son preference plays a non-trivial role in fertility regulation in the sense that a higher degree of son of preference affects the policy of reducing fertility level. This ill pattern is also performed in the study. Sex discrimination before birth is one of the most important issues in many communities in the world. Parents want the first born to be a boy, or after a number of daughters, or even only a boy instead of many daughters. Son preference has a strong affect on family size. The finding 0.2951 shows the significant impact on waiting time to conception in Table 2. Similarly, a short waiting time to conception can be seen among the women having higher qualifications. On the contrary, higher educational level of husband is associated with increased length of the duration in waiting time in the study population. But it is found to be statistically insignificant.

The benefits of a longer birth interval do not diminish significantly when the length of breastfeeding is accounted for statistically, suggesting that longer waiting time benefits children through other mechanisms in addition to allowing longer breastfeeding (PIP 2003). Here, it is a must to look whether there are any further links between lactation and waiting time to conception as waiting time is one of the major components of birth interval. It may be concluded that lactation has a direct impact on the dynamics of waiting time to conception. If the lactation period is long, their waiting time to conception is also considerably long. It is worthwhile to mention in the analysis that lactation, measured by duration of breastfeeding, has less hazards in the sense that the increase in lactation lengthens the duration of WTC.

There are visible variations in the mean waiting time according to religious differences. The Hinduism group forms the majority in the study population. Their waiting time is longer than other religion groups. However, Islam is a minority group. They have restrictions with using contraceptive devices. The widows have a greater chance remarriage among themselves and less strict observance of abstinence and religious celibacy exists. In case of contraceptive devices, the sign of β - coefficient in Table 2 highlights that the use of contraceptive devices can lengthen its waiting time to conception. But it is not statistically significant. It may perhaps be the fact that the eligible mothers generally use such devices after fulfilling the desired number of children even in proportion with respect to sex. According to the finding of Christina et al. (2014), most couples use pills (18.7%), condoms (11.3%), injectables (8%), intrauterine devices (5%), save period (5%), withdrawal (2%), Norplant (1%) and other methods (1%).

CONCLUSION

Waiting time to conception plays a tremendous role in human fertility regulation. Among the variables of interest, the couples that marry late have a tendency towards quick childbearing to compensate their lost reproductive period. Waiting time to conception plays a tremendous role in fertility regulation through birth interval. Among the variables of interest, lactation, death of previous child during infancy, desired number of sons by wife and sex of previous child have highly significant impacts on the dynamics of waiting time to conception at a 0.01 probability level of significance. The duration also varies with religious differentials, significant at a 0.05 percent probability level after adjusting the effects of other factors under consideration. The death of a previous child during infancy shortens the waiting time through emotional feelings of the couple. It may be due to sudden ends breastfeeding practices, which results in the women returning to menses and resuming ovulation sooner.

RECOMMENDATIONS

The present study is carried out only with 1008 rural Manipuri women residing in the valley areas of the state. It may therefore be suggested that such a study may be taken on a large scale covering the entire geographical parts

of Manipur. This will help assess the effects of the variation in waiting time to conception.

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