A Survey on Waiting Time to Conception: Special Reference to Kabui Tribe in Manipur

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Abstract

The waiting time to conception may be influenced by demographic, behavioural, socio-economic and cultural factors. The length of waiting time to conception may be considered as the determinant of fertility. The importance of the study of waiting time to conception for acquiring knowledge about the effectiveness of birth control devices. According to the 2011 census, the population of Kabui tribe is 1,03,908. A household survey was conducted in the valley area of Manipur interviewing 725 eligible women. The personal interview method is adopted for the collection of data. The respondents are the women having at least two births say first and second. Waiting time to conception plays a tremendous role in fertility regulation through the birth interval. Among the variables of interest, place of residence, duration of breastfeeding of the previous child are highly significant and educational level of wife, use of the contraceptive device by husband has a significant impact on the dynamics of waiting time to conception after adjustment the effect of other factors under consideration.

Keywords – Kabui**,** waiting time to conception, demographic, behavioural, socio-economic, eligible women.

Introduction

Natural fertility depends on the duration of reproductive span and length of the birth interval (Bongaarts and Potter, 1983). In the study of the birth interval, various are necessary to incorporate since is a complex procedure influenced by various factors like demographic, behavioural, socio-economic, physiological, and socio-cultural. The birth interval is very much important in various aspects. Some of the aspects are the study of the health status of women during their childbearing period and the health status of the newborn children. Now-a-day the occupation and profession of mother and father of the children contribute to making birth interval more and more complete. The birth interval may vary from society to society or from the community to the community and also within society to the community itself. Several studies have therefore shown that women with a very short interval between pregnancies are at increased risk of complications such as preterm birth, neonatal death, and intrauterine growth restriction. One of the most important components for shortening or lengthening to the birth interval is waiting time to conception. The waiting time to conception, defined to be the time interval between the resumption of menses after the last pregnancy until the beginning of next pregnancy, is highly influenced by demographic, behaviour, socio-economic, cultural factors (Narendra,1984; Kathleen et al.,1989; Lantz et al.,1992; Clegg, 2001, etc.). It may also be defined as a susceptive state or length of ovulatory exposure of a fecund woman. It composed of one or more than one menstruation cycle(s) and it terminates when the conception takes place. In this study, the eligible women that

were considered were from various sectors with different educational level and level of family status. The respondents are strictly based on the eligible women having at least two births say first and second. An eligible woman is hereby defined if both spouses are alive and normally living together up and she is under the childbearing period. The present study is an attempt to evaluate the causal effect of the duration of waiting time to conception concerning some demographic, behavioural and socio-economic determinants among the Kabui tribe in Manipur.

In this paper, the duration of waiting time to conception is taken to be the response variable. Seventeen explanatory variables are taken into account of ten are quantitative and the other seven categorical ones. The quantitative variables are age at menarche, age at marriage, age at delivery, desire number of the son, desire number of the daughter, educational level, family income, lactation, number of living children, parity and the categorical variables are the place of residence, the availability of separate room in the household, the status of the previous child during infancy, employment status, sex of the previous child, religion, use of contraceptive devices. The focus of this analysis is to explore the relationship between waiting time to conception of women and seventeen explanatory variables. It has also to produce a more precise estimate of the hazard or risk of being shorten waiting time to conception caused by any interested variable with adjustment for other explanatory ones under study. The eligible women are considered into did not meet the two criteria -- (i) she must have at least two pregnancies in her lifetime and (ii) her most recent pregnancy must have resulted in two live births. The analysis is carried out by utilizing the well-recognized statistical technique namely Proportional Hazard model (PH- model) introduced by Cox in 1972 through SPSS (Statistical Package for Social Sciences). The results are expressed in terms of β-coefficients, standard error (SE) of β, P-values and relative risk (RR) with 95% confidence interval (CI).

Objective

To study the effect of covariates of the duration of waiting time to conception according to various factors such as demographic, behavioural and socio-economic determinants among the Kabui tribe in Manipur by Proportional Hazards model.

Materials and Methods

The survey was conducted in the valley area of Manipur consisting of 725 eligible women. A standard questionnaire was used to know about the different causes and the nature of the waiting time to conception. The personal interview method is adopted for data collection using a pre-tested and semi-structural interview schedule. Cluster Sampling was adopted for the study by considering a district as a cluster. For the propose of the study, Cox`s Proportional Hazards Model (PH model) was used in the case of the multivariate approach. The respondents are strictly based on the eligible women having at least two births say first and second. An eligible woman is hereby defined if both spouses are alive and normally living together up and she is under the childbearing period. As the first step of the survey, the eligible women are identified and then fully be explained them the need and purpose of the present study.

The general form of the Cox`s proportional hazard model is

$$h(t, Z) = ho(t)\psi(Z)$$

where ho(t) is the baseline failure rate or typical hazard and

$\psi(Z)$ is a parametric link function bringing in the covariates.

It satisfies, $\psi(0)=1$ and $\psi(Z)\geq 0$ for all Z.

Here, the commonly used form of ψ is

$$\psi(Z) = \psi(Z, \beta) = \exp(\beta,' Z)$$

which is known as the "log-linear form". Thus for the individual with covariate vector Z, the hazard function h(t, Z) can be represented as,

$$h(t, Z)=ho(t)\exp(\beta,' Z)$$

so the ratio, $h(t, Z)/ho(t)=\exp(\beta,'Z)$ represents the relative risk of failure. Further, $\log[h(t,Z)/ho(t)] =(\beta,' Z)$ is a linear regression model and hence the name "log-linear model". Since the regression coefficients are constant and covariates are fixed, then the hazard h(t, Z) and ho(t) are proportional and hence the name Proportional Hazards.

The interpretation of the model involves the examination of the coefficients for each explanatory variable. For continuous variables, the parameter β denotes the effect of a unit change in the independent covariate on the log of the hazard rate, after adjustment of the other variables. For categorical covariates, β represents the derivation of a specified group from the hazard of the reference group. The exponential of the coefficients, exp(β) also uses to express the hazard of a specific group as a proportional of the baseline hazard.

. **Variable**

For analysis purpose, the response variable is waiting time to conception which is denoted by WTC and it is taken as a continuous-time variable measured in terms of months and the classified explanatory variables are taken as below:

Sl. No.	Variable Code	Type	Description
1	RU	Categorical	Place of residence: RU = 1, if Urban = 0, if Rural
2	ASR	Categorical	Separate room of the couple: ASR=1, if yes, = 0, otherwise
3	Educational Level EDM EDW	 Quantitative Quantitative	 No. of years completed by husband in education No. of years completed by wife in education
4	Employment status ESH ESW	 Categorical Categorical	 Employment Status of husband: ESH=1, if employed =0, otherwise Employment Status of wife: ESW=1, if employed =0, otherwise
5	INC	Quantitative	Monthly income of the family

6	Age at marriage AMH AMW	 Quantitative Quantitative	 Age of husband at marriage Age of wife at marriage
7	AME	Quantitative	Age of wife at menarche
8	Desire number of son CLBH CLBW	 Quantitative Quantitative	 Desire number of sons by husband Desire number of sons by wife
9	Desire number of daughter CLGH CLGW	 Quantitative Quantitative	 Desire number of daughters by husband Desire number of daughters by wife
10	No. of living children NS ND	 Quantitative Quantitative	 Number of sons at present Number of daughters at present
11	PT	Quantitative	Parity
12	SEX	Categorical	Sex of previous child: SEX=1, if boy =0, otherwise
13	DA	Quantitative	Age of mother at delivery of previous child
14	RAL	Categorical	Status of previous child: RAL=1, if death =0, otherwise
15	LAC	Quantitative	Lactation i.e., duration of breast feeding of previous child in month
16	FPH	Categorical	Use of contraceptive devices by husband: FPH=1,if yes =0, otherwise
17	RELIN	Categorical	Religion: RELIN=1, if indigenous religion =0, otherwise

Result

The results are also expressed in terms of β-coefficients, standard error (SE), P-values and relative risk (RR, exp-β) with a 95% confidence interval (CI). The response variable is waiting time to conception in the analysis and it is a continuous-time variable measured in terms of the month. The explanatory variables are defined as the place of residence (RU), age at menarche (AME), age of marriage of husband (AMH), age at marriage of wife (AMW), availability of separate room (ASR= 1, if yes and 0, otherwise), age at delivery of a previous child (DA), the status of the previous child (RAL= 1, if dead and 0, otherwise i.e., alive), desire number of daughter by husband (CLGH), desire number of daughter by wife (CLGW), desire number of a son by husband (CLBH), desire number of a son by wife (CLBW), educational level of husband (EDH = number of a complete year of education), educational level of the wife (EDW = number of a complete year of education), employment status of husband (ESH =1, if employed having regular income and 0, otherwise i.e., not employed having no regular income), employment status of the wife (ESW = 1, if employed having regular income and 0, otherwise i.e., not employed having no regular income), family income (INC), Status of lactation (LAC = duration of breastfeeding in months), number of a daughter living at present (ND), number of a son living at present (NS), parity (PT), sex of the previous child (SEX = 1, if boy and 0, girl), religion (RELIN = 1, indigenous religion and 0, otherwise), and use of the contraceptive device (FPH = 1, if used and 0, otherwise).

After applying PH-model to the variables under study by Enter method, we have twenty-three classified regression coefficients (β) of the seventeen explanatory variables with their proper classifications

which are quantified by P-value of test statistics and exp(β)-relative risk. Two statistically significant and two other highly significant coefficients are found in the analysis shown in the table.

After adjustment for the effects of other explanatory variables, the place of residence has a highly significant impact on the duration of waiting time to conception which is advocated by β-coefficient (β = -1.803, P = 0.002), significant at 0.01 probability level. It indicates that waiting time to conception is more significantly larger in the couples of the urban category than the rural counterparts. In this case, exp(β)= 0.165 with 95% confidence interval (CI), (0.052, 0.525) evidence that 83.5% more risk on the hazard of short duration in waiting time to conception can be observed in the rural category than that of urban counterparts.

Table

Cox's Regression analysis of Waiting Time to Conception with respect to explanatory variables

Variable	β	SE	Sig.	Exp(β)	95.0% Cl for Exp(β)	
					Lower	Upper
RU	-1.803**	0.591	0.002	0.165	0.052	0.525
ASR	1.000	0.699	0.153	2.719	0.691	10.705
EDH	0.106	0.093	0.254	1.112	0.927	1.333
EDW	-0.228*	0.088	0.010	0.796	0.670	0.947
ESH	-0.034	0.595	0.954	0.967	0.301	3.105
ESW	1.122	0.784	0.152	3.070	0.661	14.260
INC	0.000	0.000	0.137	1.000	1.000	1.000
AMH	0.070	0.080	0.381	1.072	0.917	1.254
AMW	-0.090	0.231	0.696	0.914	0.582	1.436
AME	0.157	0.360	0.663	1.170	0.578	2.371
CLBH	-0.683	1.529	0.655	0.505	0.025	10.113
CLGH	0.991	1.247	0.427	2.693	0.234	31.010
CLBW	0.758	1.596	0.635	2.135	0.093	48.758
CLGW	-0.516	1.570	0.742	0.597	0.028	12.953
NS	-0.572	1.154	0.620	0.564	0.059	5.423
ND	-0.576	1.229	0.639	0.562	0.051	6.247
PT	0.493	1.123	0.661	1.637	0.181	14.775
SEX	-0.259	0.669	0.699	0.772	0.208	2.864
DA	0.163	0.208	0.433	1.177	0.783	1.769
RAL	1.034	1.496	0.489	2.813	0.150	52.797
LAC	0.140**	0.054	0.009	1.150	1.035	1.278
FPH	-1.869*	0.801	0.020	0.154	0.032	0.742
RELIN	-0.643	0.779	0.409	0.526	0.114	2.422

The impact of the educational level of wife on the duration of waiting time to conception after adjustment the effect of their explanatory variables are found to be significant. The educational level of the wife (β = - 0.228, P = 0.010 exp(β) = 0.796 with 95% CI (0.670, 0.947)) has fewer hazards in the sense that the increase in the educational level uncertain in the duration of waiting time to conception. It indicates that each one-year duration increase in the pursuit of education can pull a 20.4% increase in the duration of waiting time to conception.

With the adjustment of the effect of other explanatory variables, the effect of the duration of breastfeeding (or lactating) is observed to be highly significant on the duration of waiting time to conception. The increase in the duration of breastfeeding β = 0.140, exp(β) = 1.150 with 95% CI (1.035, 1.278)) shortens

the duration of waiting time to conception. It is contrary to the findings of other studies and the general belief. But the association, in this case, may perhaps be linked with age at marriage, number of son desire, number of the daughter at present, etc. whose effect are already adjusted at a certain value.

One of the explanatory variables having a significant impact on the duration of waiting time to conception after adjusting the effect of other explanatory variables is the use of the contraceptive device by the husband. The present study observes that the deviation of waiting time to conception ($\beta = -1.869$, $\exp(\beta) = 0.154$ with 95% CI (0.032, 0.742)) is significantly longer in the case when the husband uses family planning devices. It indicates that 84.6% more risk on the hazard in a short duration of waiting time to conception can also be observed in wives of those husbands not using the contraceptive device than that of the wives of the husband using such a device.

Conclusion

Considering in irrespective of all covariates, the couples residing in urban areas have a longer deviation of waiting time to conception than those residing in rural areas. It may be due to reason that the couples at urban areas may get or may have the opportunity to get a higher level of education, and as a result of it, they may aware about the desired number of children and hence about the waiting time to conception. They may have enough knowledge about the family planning device and its usage (Hill and Elizabeth,2014, Narendra,1984, N.S.,2002, Hemochandra,2006).

Irrespective of all covariates, the couples those who marry late tending quick childbearing try to compensate they are earlier lost reproductive period. It has a linkage of getting the desired number of children. Moreover, their effective reproductive period is being short and hence directly results in short waiting time to conception (Narendra,1984, Nath et al.,1994, Clegg,2001 and Singh,2002). On the contrary, when the effects of various covariates are adjusted, the impact of age at marriage of both spouses is statistically insignificant in the study. This is thought to be caused by couples educational level in the sense that age at marriage is significantly associated with the educational level achieved.

Perhaps, the death of the previous child during infancy limits the duration of waiting time to conception through emotional feelings of the couples. Even irrespective of lactation, an infant death may exert a psychological pressure on parents to make up the lost as early as practicable. In other words, the behaviour of “child replacement” effect involves a deliberate decision by the couples to compensate the death child leading to short waiting time to conception. But in this study, this factor has an insignificant impact. It may be due to presence of an infant or young child and strain of rearing the child may reduce the desire for having a sexual relationship which may result in reducing the coital frequency and hence leading to longer waiting time to conception (Swenson,1977, Trussel and Wilson,1985, Lindstrom et al., 2000).

Indeed, couples have a preference for male offspring not only in study population but in many other societies in the world since boys are preferred for long term benefits such as family fortune and perpetuation of the family name. Consequently, sex preference has a strong bearing on birth interval dynamics especially in its component-waiting time to conception. Couples prefer to go for more number of children to

get the desired number of sons. Possibly, whenever there is a girls child and if the couple intends to go for more birth it exerts psychological and emotional pressure to have the next child of the desired sex quickly and hence lead to shorter duration of waiting time to conception. But the present finding indicates its insignificant role. The educational level of the husband has no impact on the duration but the wife's educational level is found to be significant at the 0.05 probability level only after adjustment of other factors under study. This indicates that whatever the age at marriage of the husband, the husband may like to get desire number of children as soon as possible due to eagerness of getting children very soon, late marriage, a greater desire number of children, etc. and at this juncture, one who can intervene is his wife. An educated wife can convince her husband in this regard and can manage the interval of the consequences of births given the health and safety of both child and mother in all respects (Khan,1973 and Kristy et al.,2003).

Generally, lactation has a significant impact on the dynamics of waiting time to conception. In the case of breastfeeding, as the increased in the duration of breastfeeding, there is an increase in the duration of waiting time to conception. But in this study, the finding contradicts with the other findings. This may be due to the reason that breastfed months are generally illiterate and they do not know how to manage interval between consequent births and have little knowledge about different family planning methods.

One of the factors which have a significant impact on the duration of waiting time to conception after the adjustment of all other explanatory variables is the use of family planning device by the husband. Such uses give long deviating of waiting time to conception.

Waiting time to conception plays a tremendous role in fertility regulation through the birth interval. Among the variables of interest, place of residence, duration of breastfeeding of the previous child are the highly significant and educational level of wife, use of family planning device by husband has a highly significant impact on the dynamics of waiting time to conception after adjustment the effect of other factors under consideration.

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