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Determining the Factors Influencing Waiting Time to Conception of Women in Manipur, India

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Abstract:

This study aims to investigate the factors influencing the waiting time to conception among Manipuri women living in the valley region of Manipur, focusing on the interplay between socio-economic, demographic, and behavioural characteristics. A sample of 979 women, each with a minimum of two pregnancies, was selected using cluster sampling across four districts of Manipur. Besides classical statistical methods Cox's proportional hazard model was employed to assess the data. The results highlight significant factors such as the wife's age at marriage, previous child's death, sex of the previous child, contraceptive usage, and religion (Hindu and Islamic) as impacting conception waiting time. Additionally, lactation, desire for a certain number of sons, and religion (Hindu) emerged as significant predictors. These findings provide insights into the complex factors that shape the waiting time to conception among Manipuri women, informing strategies for improved reproductive health services.

Keywords: *PH-model, lactation, religion, previous child, son*

Introduction:

The World Health Organization (WHO, 2005) emphasized the importance of adequate birth spacing to improve maternal and child health outcomes. WHO recommends a waiting period of at least 24 months before attempting a subsequent pregnancy to mitigate risks associated with maternal, perinatal, and infant health. For women who have experienced an abortion, the suggested interval to the next pregnancy is a minimum of six months to minimize the potential for negative maternal and perinatal outcomes. Publications from WHO and other international health organizations suggest a waiting period of 2-3 years between pregnancies as a measure to lower infant and child mortality rates.

Recent studies have provided further evidence in support of these recommendations. For instance, Cleland et al. (2019) demonstrated that longer intervals between births were associated with reductions in maternal and infant mortality rates, emphasizing the positive impact of appropriate birth spacing. Similarly, a study by Conde-Agudelo et al. (2020) reinforced the importance of birth spacing, finding that intervals shorter than 18 months were associated with increased risks of adverse maternal and infant outcomes, such as preterm birth and low birth weight. Access to family planning services and education also plays a critical role in promoting healthy birth spacing. Guttmacher et al. (2021) highlighted that women who receive comprehensive family planning education and access to contraceptives are better equipped to plan their pregnancies, resulting in healthier maternal and infant outcomes. Moreover, innovations in contraceptive methods, as noted by Blackstone et al. (2022), have made it easier for women to manage their fertility effectively. The relationship between a woman's education and her pregnancy intentions has been extensively researched. Yohannes (2010) observed that women with lower levels of formal education were more likely to report their most recent birth as unintended compared to those with some level of formal education. Employment patterns also play a significant role in influencing birth spacing. Upadhyay et al. (2002) found that employment in the formal and modern sectors correlated with longer intervals between pregnancies, possibly due to increased access to health information and resources. Understanding the complex interplay of education, employment, and access to healthcare resources is crucial for implementing effective reproductive health strategies and ensuring the well-being of women and children. By considering these factors, healthcare providers and policymakers can better support women in making informed decisions about family planning and birth spacing, ultimately contributing to improved maternal and infant health outcomes.

Objectives:

The objectives of the present investigation are i) to assess the impact of socio-economic, demographic and behavioural factors on waiting time to conception among women in Manipur; ii) to model the impact of various explanatory variables on the log hazard rate of waiting time to conception; and iii) to identify potential policy implications and interventions that could improve maternal and child health outcomes by optimizing waiting time to conception.

Materials and Methods:

This study focused on 979 women who had experienced at least two pregnancies, selected through cluster sampling in four districts of Manipur Valley namely Bishnupur, Imphal East, Imphal West and Thoubal. The sample survey was completed during eight months from April to December, 2019. The research utilized a community-based cross-sectional design. The study criteria required women to have had at least two live births. The collected data were analysed using t-test, F-test and the Cox Proportional Hazards Model. The analysis was carried out using SPSS, and results were presented as beta coefficients, standard error, P-values, and relative risk.

The research modeled the duration of waiting time for conception as the response variable, measured in months, while several explanatory variables were considered. These included age at menarche, ages at marriage of husband and wife, whether there was a separate room available (1 for yes, 0 for no), age at previous child's birth, whether the previous child had died (1 for yes, 0 for no), the desired number of daughters and sons by both the husband and wife, educational level of the husband and wife, employment status of the wife, income, lactation quantified by duration of breast feeding, number of daughters and sons currently living, parity, religion of the husband (1 for Hindu, 0 for other), and use of contraceptives (1 for yes, 0 for no). The model aimed to examine the impact of these variables on the log hazard rate, adjusting for other factors. Continuous variables were analysed for their impact on the log hazard rate when altered by one unit, while categorical variables were analysed for their deviation from reference groups. The exponential of the coefficients (exp(β)) was used to express the hazard of a specific group as a proportion of the baseline hazard.

Analysis and Results:

The study aimed to analyse the relationship between various factors and the mean waiting time to conception (WTC) among women in Manipur. Women were divided into five groups based on age at marriage, with those marrying at 30 years and above having the shortest mean duration (19.26 months), while those marrying between 20-25 years had the longest mean duration (28.40 months). The differences were significant ($F=2.87$, $P<0.05$), indicating that age at marriage significantly affects the duration of waiting time to conception.

Infant mortality was found to have a substantial impact on subsequent duration, with a significantly shorter mean duration (9.39 months) for women who experienced the death of a previous child, compared to those whose previous child survived (21.60 months). This difference was statistically significant ($t=3.85$, $P<0.01$), suggesting that infant mortality influences the duration variable. Sex preference also affected the duration, as demonstrated by mean waiting times of 22.60 months for a previous male child and 19.68 months for a previous female child. The difference was significant ($t=3.85$, $P<0.01$), indicating that sex preference plays a role in the dynamics of waiting time to conception. Lactation also influenced the duration variable with an increase in lactation duration leading to longer duration. This was statistically significant ($F=12.57$, $P<0.01$). Contraceptive use affected the duration, with couples using contraceptives having longer mean duration (23.91 months) compared to those not using them (20.37 months). This variation was significant ($t=1.99$, $P<0.05$). Religion was another factor impacting the duration variable. Hindu women had the longest waiting times, followed by Christian women, while Muslim women had the shortest waiting times (16.73 months). However, the F-test (2.06) showed no significant differences ($P>0.05$).

The Cox regression analysis revealed significant impacts of explanatory variables on WTC. Age at menarche had a significant impact on the duration variable with one year increase shortening the duration by 0.05 times. The death of a previous child during infancy significantly reduced duration, and son preference by the wife was associated with a shorter duration of waiting time to conception. Lactation also significantly increased the duration of WTC.

Discussion:

The study demonstrates that various factors influence the duration variable among women in Manipur. Age at marriage significantly impacts WTC, with later marriages resulting in shorter waiting times. Infant mortality also plays a significant role, as the death of a previous child during infancy shortens the duration variable. This may be due to the emotional impact on the couple and the cessation of breastfeeding, leading to a quicker return to ovulation. Sex preference affects the duration, with parents favouring a male child having a shorter duration. This may be due to societal pressures for male children and a desire to balance the family gender composition. Lactation, measured by the duration of breastfeeding, significantly lengthens the duration, providing benefits for child health and development. While the use of contraceptives was not found to have a statistically significant impact on the duration variable, it did contribute to longer waiting times, which could aid in spacing births and improving overall reproductive health.

Conclusion:

The empirical study reveals the complex interplay of factors influencing WTC among women in Manipur. Age at marriage, infant mortality, sex preference, lactation, and religion all play significant roles in determining the waiting time to conception. The findings highlight the importance of considering these factors in reproductive health policies and programs aimed at regulating fertility and improving maternal and child health. The study's limitations include its focus on rural Manipuri women residing in valley areas, suggesting the need for broader research encompassing the entire state. Further studies could provide more comprehensive insights into the causal effects of variations in the duration of waiting time to conception and contribute to effective fertility regulation strategies in the region.

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Table - 1: The waiting time to conception according to different factors

Factor	Category	Mean±SD	Test value
Age at marriage	< 15	26.40 ±16.66	F = 2.87 P<0.05
	15 - 20	26.86±11.79	
	20 - 25	28.40±13.05	
	25 -30	25.27±11.38	
	30+	19.26±5.04	
Death of previous child	Dead	9.39±9.17	t = 3.85 P<0.001
	Survived	21.60±16.45	
Sex of previous child	Male	22.60±17.15	t = 2.42 P<0.05
	Female	19.68±15.52	
Duration of breastfeeding	0-10	10.81±10.17	F=12.57 P<0.001
	10 – 20	16.53±18.30	
	20 – 30	20.11±10.58	
	30 - 40	24.00±12.52	
	40+	26.91±18.84	
Use of contraceptives	Yes	23.91±17.32	t =1.99 P<0.05
	No	20.37±15.95	
Religion	Islam	16.73±9.07	F=2.06 P>0.05
	Meitei	20.86±10.40	
	Hindu	22.63±13.20	
	Christian	21.39±12.54	

Table - 2: Cox's Regression analysis on waiting time to conception with socio-demographic factors

Factors	β (S.E)	P-value	Exp (β) (95% CI)
Age at menarche	0.049 (0.024)	P<0.05	1.050 (1.001-1.101)
Ages at marriage of husband	0.010 (0.010)	P>0.05	1.010 (0.992-1.030)
Ages at marriage of wife	0.052 (0.042)	P>0.05	1.054 (0.97-1.143)
Availability of separate room	-0.029 (0.086)	P>0.05	0.972 (0.822-1.033)
Age at previous child's birth	-0.048 (0.042)	P>0.05	0.953 (0.878-1.033)
Desired No. of daughter by husband	-0.048 (0.084)	P>0.05	0.953 (0.80-1.125)
Desired No. of daughter by wife	0.011 (0.081)	P>0.05	0.011 (0.862-1.186)
Death of previous child	0.977 (0.245)	P<0.01	2.657 (1.644-4.293)
Desired No. of son by husband	-0.053 (0.107)	P>0.05	0.949 (0.769-1.171)
Desired No. of son by wife	0.295 (0.114)	P<0.05	1.3431.075-1.679)
Education of husband	-0.011 (0.012)	P>0.05	1.343 (0.967-1.011)
Education of wife	0.026 (0.011)	0.0155	1.026 (1.005-1.048)
Employment status of husband	-0.048 (0.124)	P>0.05	0.953 (0.748-1.215)
Employment status of wife	0.057 (0.313)	P>0.05	1.059 (0.574-1.954)
Family income	-0.003(0.002)	P>0.05	0.997 (0.973-1.219)
Duration of breast feeding	-0.033 (0.003)	P<0.01	0.968 (0.963-0.973)
No. of daughter	0.086 (0.099)	P>0.05	1.090 (0.898-1.323)
No. of son	0.108 (0.100)	P>0.05	1.114 (0.916-1.356)
Parity	-0.077 (0.093)	P>0.05	0.926 (0.772-1.110)
Hindu religion	-0.243 (0.123)	P<0.05	0.781 (0.613-0.994)
Islam religion	0.039 (0.181)	P>0.05	1.029 (0.7195-1.474)
Sex of previous child	-0.228 (0.090)	P<0.05	0.796 (0.668-0.949)
Use of contraceptives	-0.144 (0.081)	P>0.05	0.866 (0.739-1.016)