Rapid Communication

Childbearing: The First Birth Interval and Its Determinants in the Employees of Tehran University of Medical Sciences, Iran, 2018 - 2021

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Abstract

Background: Childbearing is a major concern in some countries around the world. The fertility pattern can be described by several indicators, such as the first birth interval (FBI).

Objectives: This study aimed to predict the factors affecting the time of first birth.

Methods: This cross-sectional study is part of a cohort study in Iran (2018-2021). The participants were 986 married women who were employees at the Tehran University of Medical Sciences (TUMS) and enrolled by the census method. A checklist was used to collect information. Data were described by mean, SD, frequency, and the effect of the variables on first birth and analyzed by the Cox analysis.

Results: The adjusted hazard ratio (aHR) of the first birth was higher in the women with a high level of education than in those with a lower level of education (aHR = 0.29; 95% CI, 0.16 - 0.52; P < 0.001). Also, the hazard of earlier first birth tripled in women with higher occupation levels than those with lower occupation levels (aHR = 0.34; 95% CI, 0.59 - 0.96; P < 0.05). The hazard of first birth was lower in married women under 20 years than in those with other cohort age groups (aHR = 1.87; 95% CI, 1.09 - 1.89; P < 0.001).

Conclusions: The age at first birth is significantly under the effect of women's education, occupation, marriage age, and wealth index.

Keywords: First Birth, Birth Order, Pregnancy Intervals, Cox Model, Childbearing

1. Background

The population rate is one of the most important concerns of some countries around the world. The fertility pattern can be described by several indicators, such as the first birth interval (FBI). The first birth interval is defined as the duration of time spent by married couples to have their first child (1). This event can have a strong effect on the future life of each couple and their families, proving the couple's fertility power and preventing marriage deterioration (2). Indeed, the community will also benefit from the birth of the first child in the family, increasing happiness and hope. The time between marriage and meeting the first pregnancy is the early practice for accepting parenthood responsibilities (3-5). In addition, this decision can have significant health and demographic consequences.

Demographically, the tendency to have a child in a couple is so important since the majority of countries in the world today are facing a dramatic decline in population growth (5). Some researchers believe that decreasing the time between marriage and first pregnancy can significantly affect population growth between communities (6).

Predicting the time and factors affecting the FBI is complex and may not be generalized from one country to another in all aspects (7, 8).

2. Objectives

This study aimed to determine the associated factors of FBI in the women who were employees of Tehran

University of Medical Sciences (TUMS).

3. Methods

This cross-sectional study was the first phase of the TUMS Employees Cohort Study (TEC) from January 2018 to March 2021. Iran National Committee for Ethics in Biomedical Research approved this study (code: IR.TUMS.SPH.REC.1399.124). All participants completed the written consent form, and the data were given to the researcher in an anonymous form.

The participants were 986 married women with at least 1 child who were employees at TUMS. They were enrolled in this study by the census method. All participants' information was included in the study with the coordination of human resources of the university. The questionnaires for data collection were adapted from model survey instruments developed to measure the TEC project and reflect the health status of any participants who had any employment relationship with TUMS. All forms were filled out by the researcher and their colleagues.

The dependent variable was FBI, which was calculated by estimating the difference between the woman's age at the time of the birth of the first child and her age at the time of marriage. The covariates in this study were derived from the literature review, which mainly concentrated on the determinants of childbearing, including age at marriage, women's occupation type and educational level, age cohort, and wealth status of women after marriage.

SPSS version 21 (SPSS Inc, Chicago, IL, USA), mean, SD, frequency, and Cox regression survival model with hazard ratios were used for investigating the effect of predictors on the time of the first pregnancy. P-values less than 0.05 were considered statistically significant.

4. Results

The data of 986 married women were included in the analysis. The mean age of women was 42.69 years (SD = 8.0). The mean age of marriage and first birth were 25.2 (SD = 5.1) and 27.1 (SD = 5.25), respectively. Table 1 shows the characteristics of the study participants. The prevalence of having the first child after 5 years of marriage was 84%.

Table 2 shows the predictors of the FBI. The risk of FBI for women with bachelor's, master's, or higher degrees was 66% and 71%, respectively, higher than those who had high school degrees (P < 0.001). Compared with the workers at the laboratory, the clinicians and health practitioners had significantly the greatest risk (66%) of delaying the first birth, whereas the general service

Table 1. Descriptive Characteristics of Female Employees at Tehran University of Medical Sciences (n = 986)

Variables and Levels	Total, No. (%)
Women's age at marriage, y	
Under 20	267 (27.07)
Above 20	719 (72.92)
Women's age at first birth, y	
Under 20	171 (17.34)
Above 20	815 (82.65)
Education level	
High school	93 (9.43)
Bachelor of science	624 (63.28)
$\leq$ Master of science	269 (27.28)
Occupation type	
Official work	245 (24.84)
Clinician and health practitioner	214 (21.7)
Work at laboratory	199 (20.18)
General service provider	328 (33.26)
Wealth status	
Low	179 (18.15)
Moderate	531 (53.85)
High	276 (28)

providers had the lowest risk (5%). Accordingly, women who married before 20 years old had an early age at first birth. The results showed that the risk in both extremes of wealth was similar, and it was not statistically significant. Women who were born in older generations were less likely to become pregnant early compared to those born more recently.

5. Discussion

According to the study, the prevalence of having the first child after 5 years of marriage was 84%. Consistent with our results, in a study conducted in Iran, the majority of participants wanted to have their first child between 4 - 5 years after marriage. In this study, only 28.3% had a birth interval < 2 years, and 25% had a birth interval $\geq$ 6 years (9). Also, another study showed that 70% of the participants had their first child in the first 5 years of marriage. Among them, 50% of the women had their first birth almost 3 years (38 months) after marriage but spaced their second birth by more than 4 years (55 months) (10). Moreover, a review article showed that over 85% of women gave birth to their first child in the first 5 years of married life (11). In another study, which was done

Table 2. The Results of the Cox Proportional Hazard Model Analysis for Age at the First Birth Interval According to the Characteristics

Characteristics	Hazard Ratio	P-Value	Standard Error	95% CI
Education level				
High school [a]				
Bachelor of science	0.34	< 0.001	0.0958968	(0.19 - 0.59)
≤ Master of science	0.30	< 0.001	0.0858573	(0.16 - 0.52)
Occupation type [b]				
Official work	0.67	0.03	0.09	(0.34 - 0.86)
Clinician and health practitioner	0.34	0.046	0.18	(0.59 - 0.96)
General service provider	0.95	0.02	0.09	(0.56 - 0.89)
Work at the laboratory [a]				
Marriage age, y		< 0.001	0.15	(1.09 - 1.89)
Under 20	1.87			
Above 20 [a]				
Wealth status				
Low	0.75	0.17	0.22	(0.47 - 1.18)
High	0.74	0.02	0.03	(0.56 - 0.97)
Moderate [a]				
Age cohort (decades of birth)				
1981	0.803	0.739	.52	(0.22 - 2.91)
1971	1.16	0.822	.77	(0.31 - 4.28)
1961	1.26	0.722	0.85	(0.34 - 4.71)
< 1961 [a]				

[a] Reference category
[b] Based on the Human Resource Categorization in Tehran University of Medical Sciences

by using the data from the Demographics and Health Survey Project, it was indicated that over 90% of women had their first child in the first 5 years of married life, which it was not common to have no child in Iranian society, and only 2% of the couples would remain without a child in the first 10 years of married life (12). This variation between studies examining birth intervals in Iran may be attributed to the differences in education levels and job status. In studies examining the general population (particularly those involving housekeepers with lower education levels), the tendency to have a child immediately after marriage was higher than in the other studies. The other reason was the effect of ethnicity. In some provinces of Iran, having children (especially male children) is a value, and infertility has more stigma than the other parts. Thus, couples in these areas often try to have their first child soon after marriage, and there is a desire to have more children.

This study showed that women with higher levels of education experienced approximately 25% lower first birth than those who had lower education levels. This may be attributed to the tendency among higher educated women to have better jobs and higher incomes; thus, the cost of taking care of children for them may be more than the other women. Besides, women's views on childbearing can be influenced by education levels, as education brings new perspectives, roles, and outlooks on life (13). Educated women want to exploit new chances that come along and postpone their pregnancy (14). The women's education level can also be the main obstacle to reaching more than one pregnancy (15). Occupation status had a negative role in the first pregnancy in our study. Clinician and health practitioners (which was one of the top occupation categories in this study) had their first child at a later age. The effect of occupation on the tendency for the first birth is controversial. However, it is an accepted fact that couples usually delay their first child until the stabilization of their work or state (14). Women who have a lot of responsibility always try to juggle the demands of work and family life, which prevents them from childbearing

(15). The investigation of the precise impact of a job on a child is more complicated than it sounds. It can be cultural, familiar, or even individual. Despite these studies, a mother's job can be effective in pregnancy tendency through the possible financial security role of it (1, 16). Analysis of the effect of women's age at marriage indicated a strong positive effect of early marriage on age at first birth in our study. This result is consistent with the other studies (1, 17). One of the best justifications is that lower age at marriage, in many cases, is accompanied by the younger age of couples, less planning for pregnancy, and use of contraceptive methods. Also, mothers' age at marriage may be associated with cultural and social determinants, which may be associated with first birth (18); this could play an important role in every woman's life. Some studies have shown that older women give birth soon after marriage to have the desired number of children (8, 19). According to our study, findings supported economic theories that the wealth status of a woman after marriage determines the time of first birth; this effect was significant only in the high-income group than in the moderate-income group. The wealth status of the family is an important predictor variable for fertility in Iran (20); the high percentage of economic problems can lead to a feeling of insecurity for families. These findings are also consistent with other studies, showing that low economic levels can contribute to a longer interval between marriage and childbearing, which leads to a lower birth rate (21, 22). The age cohort of participants also plays a significant role in the first birth age. The cohort effect can identify the precise changes of a generation in childbearing preferences (14). Although our study showed that the older generation may be a preventive factor for early age at birth, this effect was not significant. Factors such as culture and huge events (which occurred between generations, such as war) have impacts on the result.

One of the limitations of this study was related to the secondary data, which limited us to check or enter some of the major predictors of FBI. In addition, the study population did not include all classes of society; thus, its generalizability is limited.

5.1. Conclusions

Age at first birth is significantly related to women's education, occupation, marriage age, and wealth status. However, the age cohort did not have any significant role in this domain. These statistical outcomes about the age at first birth and exploration of significant factors of women can be an emerging area for population management.

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