Survival Time of Young Women Childbearing in Tehran

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Abstract

Since determination of factors influencieng childbearing delay can provide convenient approaches to prevent fertility decline, nowadays studying this issue is an important issue for demographers and it is also emphasized by planners and politicians. The aim of this study is to evaluate factors influencing first birth interval among 458, young Iranian married women in Tehran province. In this cross sectional study, stratified random sampling was used to collect data of a structured questioner in 2017. Women's first birth interval was compared in confronting some demographic, socioeconomic and attitudinal factors by Kaplan-Meier estimates and Log-Rank test as non-parametric survival analysis tools. The mean of women's first birth interval was 3.33±2.67 years with a median of 3.00 years. Kaplan-Meier estimates were significantly different between levels of women's and their husband's educational level, activity, and post materialism factor (p-value<0.05). Women with university education and who had husbands with university educational level had the largest first birth interval among all other educational levels. Employed women had longer first birth interval than unemployed ones. Women lived with employed husband had shorter first birth interval. High post materialism women had the largest first birth interval.

Keywords: First birth intervals, Kaplan-Meier, Log-Rank test,Young women, Tehran, Iran.

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1. Introduction

It is important to study the factors affecting the first childbearing because it has been less than a decade that Iran has experienced fertility below the replacement level, and the delay in childbearing is a new phenomenon in the country. Currently, Iran has the lowest fertility rate in the Middle East. Studies on the fertility rate in Iran indicate that the total fertility rate has reduced from 7 births per woman in 1979 to 1.9 births in 2006 and 1.8 births in 2011. This decline is observed not only in urban but also in rural areas (Abbasi-Shavazi et al., 2009; 2013; Erfani, 2010).

Among the many indices that affect the identification of the fertility pattern, the interval between marriage and the first child is important for many reasons because in the post-marriage period the first fertility is less forgotten and almost all people remember their first pregnancy. Secondly, the delay in the menstrual cycle that occurs after fertilization is not observed in this period.

Other fertility times are heavily affected by irregular changes in this period (National Research Council and Committee on Population: 2005; Singh and Pathak: 2006). Abbasi-Shavazi and Hosseini Chavoshi (2015) used the data of Demographic Health Research (DHS) in 2010 to calculate parity progression ratio in Iran.

According to this study, in 2010, the interval between marriage and the birth of the first child increased to 3.5 years. This interval was 2.7 years in the study of Abbasi-Shavazi and Razeghi Nasrabad (2012), which was conducted, based on the Demographic Health Research data in 2000. Saadati et al., (2015) also studied the time of the first birth and its determinants in Semnan province using the parametric survival model. Their results indicate that the average interval between marriage and the first birth is 2.76 years and that by four years after the marriage; more than 90% of women have given birth to their first child. Based on the parametric survival model, the interval between marriage and childbearing of rural women, employed women and those with lower education is shorter than that for urban, non-employed and educated women.

Expansion of education, urbanization and increased participation of women are important achievements of modernization, which contribute greatly to changing attitudes and fertility behaviors (Hirschman,1985; Kravdal,1994;

Rindfuss et al., 1988). The "revolution in reproduction" and access to contraceptives is one of the achievements of technological advances that has been taken into account in the evaluation of factors affecting the delay in childbearing.

Studies conducted in Iran show that increased education levels of women (Abbasi Shevazi and Razeghi Nasrabad, 2012), the creation of a balance between individual and family goals (Abbasi Shevazi and Hosseini Chavoshi, 2015), increased education level and reduced child mortality, and increased education of children (Torabi and Abbasi-Shavazi, 2016) are factors affecting the first childbearing. Studies in other countries also suggest that working mothers gain less work experience and less income than men or childless women. Accordingly, women who want to achieve career success delay their maternity stage. On the other hand, women who reach their maternity at older ages are able to achieve high levels of human capital, including stable jobs with higher status and higher wage (Felmlee,1995; Taniguchi et al,. 2002; Uunk et al., 2005).

One of the characteristics of fertility below the replacement level is the increase in the time of the first birth which has occurred in recent years in Iran. Considering the importance of this issue, this study examines the factors affecting the first childbearing using survey data on the effect of socioeconomic dimensions of rationality on childbearing behavior in Tehran (Abdollahi, 2017).

2. Theoretical Approach

In present article we use different theories to develop theoretical approach. As Kuhnt, Kreyenfeld & Trappe (2017) noted, fertility ideals can be seen as fundamental and quite general value orientations, or as expressions of family size norms. Most of the sociologists argued that changes in the values are the key determinants of social changes. In this regard Inglehart developed a theoretical framework on value changes in the industrial societies. Theoretical framework developed by Inglehart for the studying of the rise of postmaterialist values is based on two hypotheses: (1) scarcity hypothesis suggesting that one places the greatest subjective value on those things that are

in relatively short supply (individual's priorities reflect the socioeconomic environment) and (2) a socialization hypothesis suggesting that the relationship between socioeconomic environment and value priorities include substantial time lag because one`s basic values reflect the conditions that prevailed in one`s adult years. The author puts forward the so called 'cohort replacement model' accounting for the relative size of cohort, lifecycle, and period effects as exerting particular influence over the changes in social and political values across nations (Inkina, 2017).

Another theory which can explain fertility and childlessness, especially regarding women, is Preference Theory (Hakim, 2002). Based on Hakim's approach "Preference theory does so, positing that recent social and economic changes give women genuine choices for the first time in history. A 1999 national survey in Britain shows that women choose three distinct combinations of market work and family work: They have home-centered, work-centered, or adaptive lifestyle preferences. The survey confirms that lifestyle preferences are a major determinant of fertility, employment patterns, and job choice. However lifestyle preferences no longer determine occupational choice" (Ibid, p. 428).

Also, desires and intentions can effect on fertility preferences. In this regard, Ajzen and Fishbein developed the model of reasoned action (Ajzen, 1991; Fishbein and Ajzen, 2010). "The Theory of Reasoned Action (TRA) and its extension, the Theory of Planned Behavior (TPB), are cognitive theories that offer a conceptual framework for understanding human behavior in specific contexts. In particular, the theory of planned behavior has been widely used to assist in the prediction and explanation of several health behaviors. According to the initial Theory of Reasoned Action, an *intention* to engage in a certain behavior is considered the best predictor of whether or not a person actually engages in that behavior. Intentions, in turn, are predicted by *attitudes* and *subjective norms*. That is, the more positively a person regards a certain behavior or action and the more they perceive the behavior as being important to their friends, family, or society, the more likely they are to form intentions to engage in the behavior" (LaCaille, 2013, pp.127-136).

3. Materials and Methods

In a cross-sectional study, the structured questionnaire was reviewed from 458 married young women in Tehran provinces, Iran to collect their demographic, fertility history and socio-economic characteristics in 2017. The women were selected by multi-stage stratified random sampling from different regions in Tehran (Abdolahi, 2017).

In this study, Kaplan-Meier survival analysis was applied. Life table and Kaplan-Meier techniques are useful tools to analyze the time of accrued events, such as death, marriage and birth interval. In addition, these techniques can produce correct estimates of the proportion of women who have a subsequent birth at a successive duration of exposure. If the observation duration is long enough, the proportion of women who have a subsequent birth after a given duration is similar to the parity progression ratio fromone parity to the next (Feeney, Yu, 1987; Rodriguez and Hobcraft,1980 ; Eryurt and Koç, 2012). Thus, these techniques are more sensitive to measure changes in reproductive behavior compared with conventional fertility measures, such as the TFR. These techniques may provide more detailed information about the cause of fertility decline. Using these techniques, we can learn whether fertility change is due to the spacing of births or due to a change in the proportion of women reaching high parities. In sum, life table analyses of parity orders may provide information both on quantum and tempo of fertility. In this article, we preferred to use Kaplan-Meier instead of life table technique, because it is more advantageous compared with ordinary life table technique (Bagheri and Saadati, 2016).

The Kaplan-Meier method estimates for all "event times", t_l, and can be calculated according to Formula (1):

$$S(t_l) = \prod_{l=1}^{i} \frac{n_l - d_l}{n_l} \tag{1}$$

where n is the number of individuals at risk at time t_l, and d_l is number of events at time t_l.

In the comparison of two (or more) groups of survival data, there are a number of methods that can be used to quantify between-group differences such as Log-Rank and Wilcoxon tests. For the two groups, Hypotheses are given as:

$$H_0: S_1\,(t) = S_2\,(t)$$
$$H_1: S_1\,(t) > S_2\,(t)$$

where $S_l\,(t)$ is the survival function at time t_l.

In this article, we used the log-rank test which is a nonparametric test and appropriate to use when the data are right censored. The log-rank test compares estimates of the hazard functions of the two (or more) groups for each observed event time (Harrington, 2005).

4. Result

Mean of women's first birth interval was 3.33 ± 2.67 years. In this article "age, women's and their husbands educational level, women's and their husbands activity, family expenditure, sex preferences, Ideal Number of Children (INC)" and "Economic Insecurity, Plan-base Behavior, Parental Identity, Child Positive value, Social Insecurity, Post Materialism, Conflict between child and parental duty, Psychological Insecurity, Male Breadwinner, Individualism, Perception of the child, Increasing child cost & Child Negative value" were considered as socio-economic and childbearing attitudinal factors, which can affect first birth interval. Table 1 shows frequency and percentage of covariates. Most of young women had low family expenditure (<2milionToman) (55%). 38.8 percentages of women comparing to 42.1 percentages of their husbands had university educational level. Only 28.8, 17.7, and 3.7 percentages of women were employed had sex preferences and desired no children, respectively. None of the women was in the low level of post materialism comparing to 90.8 percentages.

Table 1. Demographic and socio-economic characteristics of young women

Variable	Categories	Frequency	*Percent*
Woman Educational level	Illiterate & Nehzat	29	6.3
	Secondary& high school	42	9.2
	Diploma	201	43.9
	BC	138	30.1
	MS & PhD	40	8.7
Husband Educational level	Illiterate & Nehzat	29	6.3
	Secondary& high school	67	14.6

	Diploma	160	34.9
	BC	137	29.9
	MS & PhD	56	12.2
Wife's Activity	Employed	132	28.8
	Unemployed	325	71.0
Husband's Activity	Employed	432	94.3
	Unemployed	18	3.9
Family Expenditure	<2milion Toman	252	55.0
	2-3.5miloin Toman	144	31.4
	>3.5milion Toman	50	10.9
Sex Preferences	Yes	81	17.7
	No	371	81.0
Ideal Number of Children (INC)	.00	17	3.7
	1.00	48	10.5
	2.00	228	49.8
	3.00	68	14.8
	4+	95	20.7
Post materialism	low	0	0
	middle	30	6.6
	high	416	90.8
Total		458	100.0

Kaplan-Meier survival estimates are computed for women's first birth intervals and its survival curve is shown in Figure 1. As this figure displays, most of the young women's first birth interval (about 80%) were less than 5 years. Kaplan-Meier estimates mean, median, and standard error for first birth interval between covariates are given in Table 2. These indicators help us to understand the average and median of first birth intervals among various categories of covariates, Also p-value of Log-Rank test are shown in this table to test significant differences of first birth interval among covariates. Mean and median of Kaplan-Meier estimates were 3.25 and 3.0, respectively. The median equals to 3 means that half of the women had 3 years interval between their marriage and first birth. For simplicity only significant tests are shown in this table.
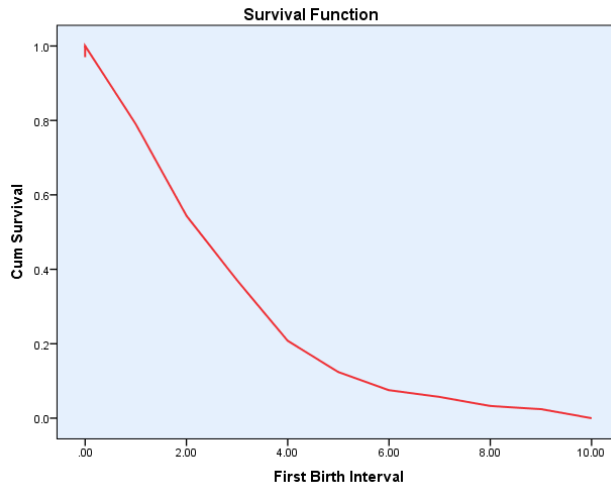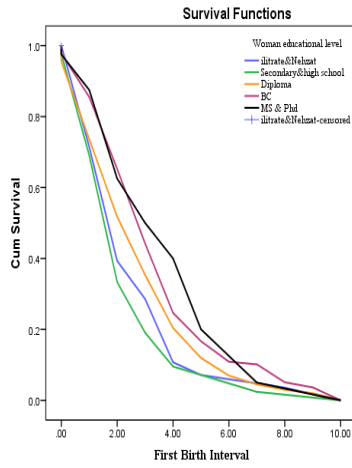
Figure1. Kaplan-Meier survival curve of first birth interval

**Table 2. Kaplan-Meier estimates of first birth interval by covariates**

Variable	Categories	Mean		Median		Log-Rank Test (P-value)
		Estimate	Std. Error	Estimate	Std. Error	
Woman's Educational level	Ilitrate & Nehzat	2.786	.403	2.000	.287	.005**
	Secondary& high school	2.476	.288	2.000	.204	
	Diploma	3.050	.151	3.000	.176	
	BC	3.638	.195	3.000	.201	
	MS & Phd	3.850	.371	3.000	.703	
Husband's Educational level	Ilitrate &Nehzat	2.754	.302	2.000	.406	.011*
	Secondary& high school	2.821	.294	2.000	.180	
	Diploma	2.956	.156	3.000	.194	
	BC	3.657	.196	3.000	.212	
	MS & Phd	3.696	.318	3.000	.465	
Woman's Activity	Employed	3.689	.209	3.000	.280	.008**
	Unemployed	3.050	.116	3.000	.121	
Husband's Activity	Employed	2.111	.301	1.000	.128	.007**
	Unemployed	3.293	.107	3.000	.133	
Post materialism	low	-	-	-	-	.001**
	middle	2.300	.231	2.000	.298	
	high	3.306	.111	4.000		
Total		3.251	.104	3.000	.132	

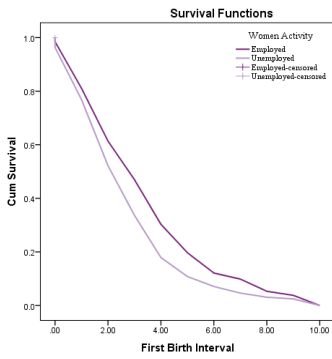** Significance level: 0.01, * Significance level: 0.05

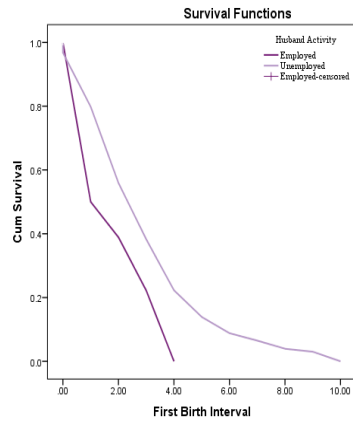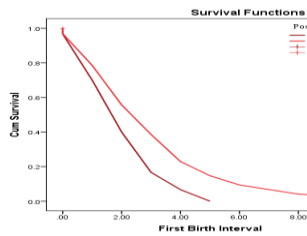Figure 2 displays the women's first birth interval survival curves, by covariates.

(a)
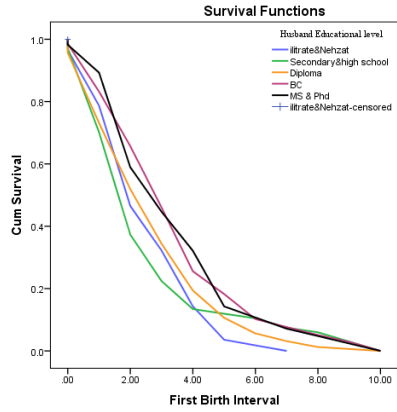
(b)

(c)

(d)

(e)

Figure 2. Kaplan-Meier survival curves of young women's first birth interval by covariates

Pattern of the survival curves by educational level (Figure, 2.a, 2.b)), showed that by increasing women's and their husbands' educational level, first birth interval also increased. These variations also proved by significant Log-Rank test p-value (<0.05). University educated women and their husband had the largest first birth interval comparing the other educational levels. Employed women had greater mean (3.689) of first birth interval than unemployed ones (3.050) (Table 2). Figure (2.c) shows the survival curves of women's first birth intervals according to their job status that displays differences between two curves. These differences are proved by Log-Rank test which is computed in Table (2) and significant at 0.01 level (p-value=0.008). Women with unemployed husbands had larger first birth interval (3.29) than employed ones (2.11). The same results can be concluded from Figure (2.d). High post materialism women had the largest first birth interval, compare to other levels of this covariate. Figure (2.e) indicated that by increasing post materialism, women's first birth interval increasing.

5. Conclusion

The study of the dynamics of timing and spacing of births is important for several reasons, including an understanding of completed family size as well as maternal and child mortality (Gyimah, 2002). Modeling fertility data is one of the greatest interests in population economic studies. Socio-economic factors such as the women's place of residence, education and activity have been correlated with birth spacing although the mechanisms by which these background variables influence birth spacing is less clear. In 38 out of 51 countries with DHS data, illiterate women were more likely than educated women to have shorter birth intervals (Setty-Venugopal and Upadhyay, 2002). The effect of maternal employment on spacing is less clear; in some settings it appears to be associated with shorter spacing. The nature of work is perhaps more important. Employment in the formal and modern sector has been found to be related to longer spacing (Mturi, 1997; Setty-Venugopal, and Upadhyay, 2002). In this paper first birth interval and factors which are affect on its variability among young married women in Tehran was analyzed by Kaplan-Meier survival estimates and Log-Rank test.The result showed that, there are

significant variations in first birth interval between different categories of woman's and their husbands'educational level, woman's and their husbands' activity, and post materialism. According a sociological approach affect in post materialism is a sign to understand social changes. The effectiveness of post materialism is so important that Inglehart asserts that a culture shift occurred should not be relegated to economic conditions only. On the other hand, the rise of post materialist values is associated by him with the postindustrial economic structure characterized by the economic dominance of the tertiary sector over that of manufacturing, a high degree of public mobilization in society and an unprecedented affluence. Inglehart argues that the fundamental value priorities in western countries have been transformed throughout the decades of material wellbeing and physical security that brought to the fore values of freedom, belonging, beauty and self- actualization. More recently, Inglehart attempted to link the psychological notion of progression on a need hierarchy with 'a principle that might be called the diminishing marginal utility' (DMU) of economic determinism. Within this framework, economic factors tend to play a decisive role under conditions of economic scarcity, but as scarcity diminishes, other factors shape society to an increasing degree. What particular factors trigger the shift toward post materialist values remain unclear (Inkina, p. 2017).

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