



Childbirth Decisions: How Socio-economic Determinants and Tokophobia Shape Delivery Choices

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Abstract

Background and Objective: Tokophobia—a pathological fear of childbirth—can significantly influence maternal health and delivery choices. The present study examines how socio-demographic factors, previous birth experiences, and tokophobia affect delivery preferences among pregnant women in western Iran.

Materials and Methods: This descriptive-analytical study was conducted on a sample of 1,001 pregnant women in Kermanshah, Iran, in 2024. Participants were selected using a combination of cluster and simple random sampling. The validated Tokophobia Assessment Questionnaire (TAQ), developed by Nunes et al., was used to measure tokophobia levels. Data were analyzed using descriptive statistics, chi-square tests, and linear regression in the SPSS (version 16) software.

Results: Younger women (≤ 20 years) are significantly more likely to prefer cesarean delivery ($P < 0.001$), while older women, particularly those aged 31-39 and ≥ 40 , opt for natural birth. The number of children strongly affects delivery preferences ($P < 0.001$), with nulliparous women favoring cesareans and those with three or more children choosing natural birth. A history of abortion is also significantly associated ($P < 0.001$), as women with past miscarriages tend to prefer natural delivery. Lower education levels and housewife status correlate with higher cesarean rates ($P < 0.001$), while university-educated and employed women prefer natural birth. Participating in childbirth classes significantly increases the likelihood of a natural delivery ($P = 0.014$). Tokophobia levels are markedly higher in cesarean births ($P < 0.001$), particularly in physical summation, panic ($P = 0.0042$), social involvement ($P = 0.0041$), and self-perception of tokophobia.

Conclusion: Cesarean preference is higher among younger, less-educated women, influenced by fear and lack of information, while experienced and educated women opt for natural birth. Socio-economic determinants and tokophobia play a key role, necessitating education, counseling, and equitable healthcare policies to reduce fear and improve maternal outcomes.

Keywords: Cesarean section, Maternal health services, Pregnancy, Socioeconomic factors

Background

Fear of childbirth, medically known as tokophobia, is a significant psychological concern affecting pregnant women worldwide, with profound implications for maternal mental health and pregnancy outcomes [1]. This fear, which can manifest during various stages of pregnancy and postpartum, not only negatively impacts the childbirth experience but may also lead to physical and psychological complications for both the mother and her family [2]. Research has established a correlation between fear of childbirth and increased use of epidural anesthesia, prolonged labor, a higher risk of labor dystocia, and emergency cesarean sections [3]. A negative childbirth experience can disrupt maternal-infant bonding and reduce exclusive breastfeeding rates [4]. Several factors contribute to the development of tokophobia,

including personality traits, such as anxiety, traumatic childbirth experiences, a history of miscarriage, insufficient social support, and poor relationships with a partner [5]. Furthermore, fear and anxiety during labor can lead to increased muscle tension, potentially hindering pelvic expansion during vaginal delivery; this exacerbates pain and perpetuates a cycle of fear, tension, and discomfort [6]. Studies also emphasize that fear of childbirth plays a crucial role in women's decision-making processes, influencing their choices regarding the mode of delivery [2]. The childbirth process presents women with various challenges and risks throughout pregnancy, labor, and the postpartum period; one of the most critical decisions in this journey is the choice of delivery method, which has a significant impact on both maternal and neonatal health; this decision should be

made based on a thorough assessment of the mother's and baby's condition during pregnancy [7].

Objectives

Decision-making regarding childbirth is shaped by a complex interplay of factors that must be carefully considered to ensure optimal outcomes for both mother and child. The present study aims to investigate the influence of socio-demographic characteristics and prior childbirth experiences on tokophobia among pregnant women in western Iran. Specifically, it explores the associations between delivery method, number of children, history of miscarriage, and educational attainment with childbirth preferences, seeking to identify underlying patterns in women's choices between vaginal and cesarean delivery. Furthermore, the study examines the extent to which the mode of delivery affects the severity of tokophobia symptoms—such as panic responses, social withdrawal, and disruptions to daily functioning. The findings are intended to inform the development of targeted prenatal care strategies and psychological interventions aimed at alleviating childbirth-related fear and enhancing maternal well-being.

Materials and Methods

Study Design and Perspective

This descriptive-analytical study was conducted in 2024 among a sample of 1,001 pregnant women in Kermanshah, Iran. Participants were recruited from a range of healthcare settings, including public health centers, clinics, and private obstetric offices throughout the city. To enhance the representativeness of the sample, a multistage sampling strategy was employed. Initially, Kermanshah was divided into eight municipal districts, each serving as a distinct cluster. Within each cluster, two health centers, two clinics, and two private obstetric offices were randomly selected for the study. Pregnant women who were present and accessible at these facilities during the data collection period were then selected using simple random sampling.

Participants were recruited through direct, face-to-face engagement at selected healthcare facilities and were formally invited to participate in the study. Individuals who provided informed consent and met the inclusion criteria—namely, being currently pregnant and expressing willingness to participate—were administered structured self-report questionnaires. The sole exclusion criterion was the presence of incomplete responses. Following a thorough review, questionnaires deemed substantially incomplete were excluded from the dataset. Ultimately, 992 completed and valid questionnaires were retained for statistical analysis, corresponding

to a final response rate of 99.1%.

Questionnaire

The questionnaire used in this study was organized into two main sections, each designed to capture essential information related to participant demographics and the assessment of tokophobia. The first section collected key background data, including age, number of children, history of abortion, educational level, employment status, economic condition, gestational age in the current pregnancy, participation in childbirth education classes, and health insurance coverage. These variables provided a comprehensive overview of the socio-demographic factors potentially influencing childbirth preferences and experiences. The second section assessed tokophobia using a standardized and validated instrument.

Tokophobia was assessed using the Tokophobia Assessment Questionnaire (TAQ), a standardized and validated instrument developed by Nunes et al. in 2020 for use in the Brazilian population. The TAQ comprises 25 items distributed across six conceptual domains: physical summation, feelings of panic, social involvement, interference with daily habits, pregnancy avoidance, and self-perception of tokophobia. It was designed to capture the emotional, psychological, and behavioral dimensions of childbirth-related fear. Each of the six domains includes representative items that reflect the nature of tokophobia. For instance, the physical summation domain includes "My fear of childbirth is causing me physical symptoms," while the feelings of panic domain features "Just talking about childbirth makes me feel desperate." The social involvement domain addresses interpersonal impact, such as "My fear of childbirth is interfering with my relationship with my family." In the domain of interference with daily habits, items, such as "My fear of childbirth is affecting my sleep" illustrate disruptions to routine functioning. The pregnancy avoidance domain includes "I tried to avoid pregnancy as much as possible due to my intense fear of childbirth," and the self-perception of tokophobia domain captures internal beliefs, exemplified by "I consider childbirth to be extremely dangerous." The TAQ has demonstrated strong psychometric properties, including a Cronbach's alpha of 0.935, indicating excellent internal consistency. Reliability was further supported by Pearson and intraclass correlation coefficients, and construct validity was confirmed through exploratory factor analysis. Although originally developed in Portuguese, the TAQ was linguistically adapted for use in our population and retains conceptual relevance across cultural contexts [8]. In the present study, the TAQ was administered

as part of a structured self-report survey. Internal consistency was reassessed, and the instrument showed a Cronbach's alpha of 0.95, confirming its reliability within our sample and supporting its suitability for use in the target population. Higher scores reflect greater tokophobia.

Data Analysis

Data analysis was performed using the SPSS (version 16) software. Both descriptive and inferential statistical methods were employed to assess the socio-demographic influences and variations in tokophobia among participants. Descriptive statistics, including means, standard deviations, and frequency distributions, were used to summarize participant characteristics and childbirth preferences. Chi-square tests were conducted to examine associations between categorical variables, revealing statistically significant relationships between age, number of children, abortion history, education level, and delivery preferences. Furthermore, linear regression analysis was employed to assess the impact of childbirth history and delivery method on tokophobia scores, adjusting for key covariates.

Results

Table 1. Socio-demographic determinants of delivery preferences

Variable	Total N (%)	Do you have a history of childbirth?				P-value
		Yes		No		
		Natural	Cesarean	Probability Natural	Probability Cesarean	
Age	20≥	147 (14.84%)	14 (9.52%)	62 (42.18%)	18 (12.24%)	53 (36.05%)
	21-29	431 (43.48%)	78 (18.10%)	121 (28.07%)	165 (38.28%)	67 (15.55%)
	31-39	340 (34.29%)	89 (26.18%)	44 (12.94%)	174 (51.18%)	33 (9.71%)
	40≤	74 (7.47%)	21 (28.38%)	3 (4.05%)	43 (58.11%)	7 (9.46%)
Number of Children	No child	387(39.01)	-	230 (59.43%)	-	157 (40.57%)
	1-2	511(51.51)	182(35.62)	-	326(63.80)	3(0.59)
	3≤	94(9.48)	20(21.28)	-	74(78.72)	-
Abortion	No	703 (70.77%)	126 (17.92%)	183 (26.03%)	263 (37.41%)	131 (18.63%)
	Yes	237 (29.23%)	58 (24.47%)	39 (16.46%)	115 (48.52%)	25 (10.55%)
Education	Primary	107 (10.87%)	25 (23.36%)	11 (10.28%)	59 (55.14%)	12 (11.21%)
	Secondary	315 (31.84%)	53 (16.83%)	93 (29.52%)	121 (38.41%)	48 (15.24%)
	Diploma	339 (34.24%)	71 (20.94%)	68 (20.06%)	151 (44.54%)	49 (14.45%)
	Academic	221 (22.05%)	50 (22.62%)	57 (25.79%)	63 (28.51%)	51 (23.08%)
Job	Housewife	773 (78.04%)	151 (19.53%)	191 (24.71%)	324 (41.91%)	107 (13.84%)
	Employed	205 (21.96%)	44 (21.46%)	38 (18.54%)	70 (34.15%)	53 (25.85%)
Economic Status	Poor	186 (18.78%)	36 (19.35%)	40 (21.51%)	78 (41.94%)	32 (17.20%)
	Moderate	673 (68.14%)	139 (20.65%)	162 (24.07%)	277 (41.16%)	95 (14.12%)
	Good	128 (12.93%)	24 (18.75%)	28 (21.88%)	43 (33.59%)	33 (25.78%)
	No	247 (25.25%)	59 (23.89%)	45 (18.22%)	104 (42.11%)	39 (15.79%)
						0.152

Table 1 highlights significant socio-demographic factors influencing delivery preferences, including age, number of children, abortion history, and educational level. Age demonstrates a strong statistical association ($P<0.001$), with younger women (≤ 20 years) showing a higher probability of cesarean deliveries, while older age groups, particularly women aged 31-39 and ≥ 40 , are more likely to opt for natural births. Similarly, the number of children shows a significant link ($P<0.001$), as women without children predominantly favor cesarean sections, whereas those with three or more children overwhelmingly opt for natural births. Additionally, a history of abortion is significantly associated with delivery preferences ($P<0.001$), with women who have had an abortion more likely to choose natural births.

Educational attainment and employment status also play meaningful roles ($P < 0.001$ for both). Women with primary or secondary education tend to prefer cesarean deliveries, whereas those with higher education show a greater inclination toward natural childbirth. Similarly, housewives are more likely to choose cesareans, while employed women lean towards natural births. Participation in childbirth classes ($P=0.014$) correlates strongly with higher natural birth rates.

Health Insurance	Yes	730 (74.75%)	141 (19.32%)	178 (24.38%)	290 (39.73%)	121 (16.58%)
Pregnancy Week for this Childbirth	10≥	163 (17.77%)	36 (22.09%)	35 (21.47%)	60 (36.81%)	32 (19.63%)
	11-29	518 (56.55%)	110 (21.24%)	101 (19.50%)	216 (41.70%)	91 (17.57%)
	30≤	235 (25.66%)	52 (22.13%)	64 (27.23%)	96 (40.85%)	23 (9.79%)
History of Childbirth Classes	No	514 (54.00%)	105 (20.43%)	126 (24.51%)	184 (35.80%)	99 (19.26%)
	Yes	439 (46.00%)	88 (20.05%)	95 (21.64%)	197 (44.87%)	59 (13.44%)

Table 2 presents components of tokophobia and examines their variation based on childbirth history and method, with statistically significant values reported. Physical summation shows a marked difference between natural and cesarean births (<0.001), indicating that women undergoing cesareans experience higher physical impacts related to tokophobia. Feelings of panic and social involvement also significantly differ ($P = 0.0042$ and $P=0.0041$, respectively), with cesarean births correlating with elevated levels of panic and social disruption. Interference with daily habits (<0.001) is notably higher among cesarean cases, indicating that

the childbirth method has a significant impact on daily functioning.

Self-perception of tokophobia (<0.001) and the overall tokophobia total score (<0.001) reveal that cesarean births are associated with more pronounced tokophobia compared to natural births. However, avoidance of pregnancy shows no statistically significant difference ($P=0.1162$), suggesting that this specific component is less influenced by childbirth history or the method of delivery. The findings collectively underscore the heightened psychological and social impacts of tokophobia in cesarean births, emphasizing the need for targeted interventions to manage these experiences.

Table 2. Analysis of Tokophobia components in relation to childbirth history and delivery method

Tokophobia Component	Do you have a history of childbirth?				P-value	
	Yes		No			
	Natural	Cesarean	Probability Natural	Probability Cesarean		
Physical Summation	12.64 ± 4.80	12.31 ± 5.49	11.26 ± 4.07	13.75 ± 5.24	< 0.001	
Feeling of Panic	6.52 ± 2.99	6.78 ± 3.29	6.68 ± 3.03	7.65 ± 3.62	0.0042	
Social Involvement	6.48 ± 2.80	6.57 ± 3.09	6.31 ± 2.54	7.27 ± 3.13	0.0041	
Interference with Daily Habits	7.33 ± 3.10	7.37 ± 3.29	6.83 ± 2.92	8.22 ± 3.39	< 0.001	
Avoidance of Pregnancy	7.69 ± 3.41	7.78 ± 3.61	7.29 ± 3.21	7.97 ± 3.61	0.1162	
Self-perception of Tokophobia	3.66 ± 1.75	3.74 ± 1.63	3.63 ± 1.65	4.41 ± 1.77	< 0.001	
Tokophobia Total	44.86 ± 15.58	44.76 ± 17.09	42.01 ± 12.82	49.56 ± 15.75	< 0.001	

There was a non-significant reduction in tokophobia scores for women with a prior history of childbirth compared to those with a natural birth, attending to the cesarean delivery ($\beta=-0.10$, 95% CI:-3.06 to 2.88). Interestingly, women who had no history of childbirth and had a natural delivery showed significantly greater reduction in tokophobia scores ($\beta =-2.85$, 95% CI:-5.51 to -0.20). However, this effect lost significance after adjustment ($\beta =-2.18$, 95% CI:-4.91 to 0.55). On the other hand, women who did not have any previous

childbirth experience and had a cesarean delivery showed significantly higher tokophobia scores in the crude model ($\beta =4.69$, 95% CI:1.49 to 7.90), although this association also became non-significant after adjustment ($\beta =3.13$, 95% CI:-0.34 to 6.61). These results suggest that certain combinations of childbirth history and delivery method have an impact on variations in tokophobia scores; however, many of these relationships are likely confounded, as most of the effects did not persist after adjustment (Table 3).

Table 3. Linear regression analysis of Tokophobia components based on childbirth history and delivery method

	Crude β (95%CI)	Crude β (95%CI)
History of Childbirth/Natural Method of Delivery	1	1
History of Childbirth/Cesarian Method of Delivery	-0.10(-3.06_2.88)	-1.58(-4.91_1.73)
No History of Childbirth/Natural Method of Delivery	-2.85(-5.51_-0.20)	-2.18(-4.91_0.55)
No History of Childbirth/Cesarian Method of Delivery	4.69(1.49_7.90)	3.13(-0.34_6.61)

It can be observed from Figure 1 that the tokophobia scores tend to decrease with the addition of children for both delivery methods, indicating a moderating effect of parity. However, it is noteworthy that women with cesarean deliveries report, by far, higher tokophobia scores in comparison to women who have had natural births, without considering the level of parity. This

difference is more pronounced among women with low parity, but does not persist as they have more children. The confidence intervals depicting the confidence level ranges indicate that the perceived discrepancies become more pronounced as the number of children increases, which emphasizes the enduring impact of the method of delivery on tokophobia (Figure 1).

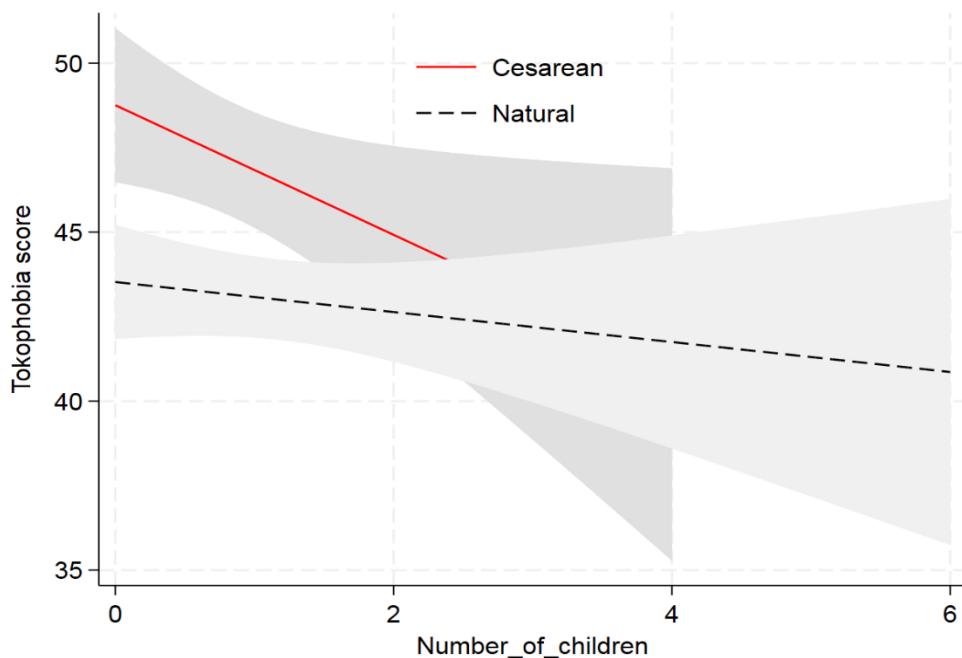


Figure 1. Comparison of Tokophobia scores across childbirth history and delivery methods

Discussion

Our findings indicate that younger women (≤ 20 years) and those without childbirth experience are more likely to prefer cesarean delivery, possibly due to fear and lack of awareness. In contrast, women with three or more children predominantly opt for natural birth, emphasizing the role of prior experience in delivery decisions. This finding aligns with previous studies [9, 10], although Kosan et al. found no significant association between age and delivery preference [7]. These results highlight the need to educate first-time mothers about childbirth options and the benefits of vaginal delivery.

Housewives showed a higher tendency toward cesarean delivery, consistent with findings from Ghana [9], where employed women were less likely to undergo cesarean sections. However, Nabawanuka et al. reported the opposite in Uganda [11], and other studies found no significant link between employment status and delivery choice [7]. These mixed results suggest that occupational and cultural factors may influence delivery preferences.

Although economic status was not statistically significant in our study, women with better financial conditions had higher rates of cesarean sections. This finding is supported by Tilahun et al. [9], while Kosan et al. found no such association [7]. Access to medical services may explain this trend, underscoring the importance of equitable prenatal care regardless of socioeconomic status.

Women with a history of miscarriage in our sample leaned toward natural birth, contrasting with studies that associate miscarriage history with cesarean preference [12, 13]. These differences may reflect cultural norms, psychological responses, and variations in prenatal counseling. Delivery decisions for these women should be individualized and supported by clinical and emotional care.

Educational level also influenced delivery preference. Women with primary and secondary education were more inclined toward cesarean delivery, while those with higher education and childbirth class attendance favored natural birth. This finding supports previous findings [7, 9, 14] and highlights the role of awareness in reducing unnecessary cesarean sections.

Late-stage pregnancy (≥ 30 weeks) was associated with increased cesarean preference, likely due to heightened anxiety. This aligns with prior research [15], which emphasizes the need for psychological support and education during the final weeks of pregnancy.

Finally, our results confirm that cesarean delivery is associated with higher levels of tokophobia, including panic, social withdrawal, and disruption of daily life, while pregnancy avoidance remained statistically unchanged [1, 2, 4]. Tokophobia was more pronounced among low-parity women and decreased with childbirth experience. These findings underscore the psychological burden of tokophobia and the need for targeted interventions, including counseling, education, and integration of tokophobia screening into prenatal care. Further research should investigate the long-term psychological effects and effective strategies to mitigate fear and enhance maternal well-being.

This study is strengthened by its large sample size and the inclusion of participants from varied socio-demographic backgrounds, which enhances the external validity and generalizability of the findings. The use of the validated TAQ further contributes to the reliability of psychological measurements. Nonetheless, the reliance on self-reported data may introduce response bias, and the cross-sectional design restricts the ability to draw causal inferences. Additionally, cultural and healthcare system differences may influence participants' perceptions and responses, warranting cautious interpretation of the results. Despite these limitations, the study offers meaningful insights into childbirth preferences and the psychological dimensions of tokophobia, underscoring the need for targeted educational and clinical interventions. Future research should consider longitudinal approaches to explore the long-term trajectory of tokophobia and develop tailored strategies to reduce childbirth-related fear and support informed maternal decision-making.

Conclusion

Our findings highlight various factors influencing women's childbirth preferences, including age, education, employment status, economic conditions, miscarriage history, and late pregnancy anxiety. Younger and less-educated women tend to prefer cesarean delivery, often due to fear and lack of information, while higher-educated women and those with childbirth experience opt for natural birth. Psychological and social influences play a crucial role, especially in the final weeks of pregnancy. Reducing cesarean rates requires targeted education, psychological counseling, and equitable healthcare policies to support informed decision-making,

mitigate anxiety, and promote maternal well-being. Future research should explore long-term psychological effects and effective interventions for tokophobia.

Ethical Considerations

The research ethics committee at Kermanshah University of Medical Sciences, Iran, approved the study protocol (KUMS.REC.1402.590). All procedures adhered to the ethical standards of the institution and the national research committee, as well as the 1964 Helsinki Declaration and its subsequent amendments. Before participating, participants were provided with detailed information about the study, including its procedures, the confidentiality of their information, and its purpose. Informed consent for participation in the study was obtained from all participants. The participants were given the participant information statement and signed the consent form.

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Authors' Contributions

M.M.A. and F.J. contributed to the interpretation of the study's findings. M.M.N. was involved in data analysis, while N.K. was responsible for drafting the initial version of the manuscript. All authors participated in the final approval of the revised manuscript for publication.

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Conflicts of Interest

The authors declare that they have no conflicts of interest.

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