

Research Paper

Investigating Childbearing Desire and Associated Factors in Northeast Iran

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Background: Considering the irreparable effects of decreased childbearing desire in Iran, the present study aimed to explore the state of childbearing desire and the associated factors in the northeast of Iran.

Methods: The present cross-sectional-analytical study was conducted on 807 married and unmarried men and women residing in Khorasan Razavi Province, using a multi-stage sampling method in 2023. The participants were divided into two desiring and undesiring groups according to their childbearing desires. Data were collected using a demographic questionnaire and two questionnaires on the reasons for childbearing desire: One for those likely to have children and another for those unlikely to have children in the future. Data were analyzed by SPSS software, version 26 using descriptive and inferential statistics. The significance level was set at <0.05.

Results: The mean age of participants was 36.45±9.24 years and the majority were female (78.8%). The results showed that 70% of participants did not desire to have children in the future. The main reason for childbearing desire was interest in children (71.9%), while another reason was the desire to have enough children (36.3%). The common reasons for the lack of desire for childbearing included already having enough children (43.7%) and concerns about their future (27.6%). The results of multiple logistic regression also showed significant relationships between marriage (OR=9.58, 95% CI, 4.38%, 20.94%, P<0.001), age and the number of children (OR=1.958, 95% CI, 1.61%, 2.37%, P<0.001) and childbearing desire.

Conclusion: The present findings provide insights into the current state of Iranians' childbearing desire and can serve as a valuable resource for policymakers in their planning efforts.

Keywords: Childbearing, Desire, Lacking desire, Population

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Introduction

The past decades have witnessed significant shifts in global population dynamics, including a notable decline in childbearing desires worldwide [1]. The global total fertility rate decreased from 4.98 children per woman in 1960 to 2.4 children per woman in 2017 [2]. By 2020, this figure remained stable at 2.4 children per woman globally [3]. In Iran, this trend has mirrored global patterns, with a marked reduction in childbearing desires over the past three decades. In 1980, the fertility rate was 4.7 children per woman, but by 2018, it had declined to 2.14 [4, 5]. This sharp decline raises significant concerns regarding the country's future demographic landscape.

While declining fertility rates in some countries are perceived as a solution to overpopulation, in others, including Iran, this trend poses a considerable challenge to population sustainability. Fertility is one of the most critical factors influencing population growth and plays a crucial role in determining a country's population size [6]. Compared to population changes caused by mortality, shifts in fertility rates have a more profound impact on population growth [7]. Therefore, understanding the factors that influence childbearing desires is essential for addressing these demographic challenges.

Childbearing desires are shaped by a complex interplay of social, political, cultural and economic factors, which vary depending on the living environment [8]. Population policies can significantly influence these factors, either promoting population growth or conversely, contributing to population decline. In Iran, the reduced desire for childbearing has been linked to significant socio-cultural shifts, including the growing preference for nuclear families and changing family dynamics [4]. Research indicates that more than 60% of women in Iran express no desire for additional children, highlighting a widespread trend that could have long-term implications for the country's population structure [8, 9].

Furthermore, studies have identified various factors influencing childbearing desires, such as women's employment, economic independence, education level, age at marriage and cultural norms [10-16]. However, it is crucial to note that most of the studies on this topic, particularly those conducted in Iran, are nearly a decade old [8, 9, 17]. Since then, Iran has experienced significant shifts in population policies, with an increased emphasis on encouraging childbearing to counteract declining fertility rates. Given these policy changes and the time

elapsed since the last major studies, there is a critical need for updated research to understand current trends and factors influencing childbearing desires [17-22].

In general, due to the decreased desire for childbearing among the population, Iran faces reduced population growth and lacks the necessary conditions for generational replacement. This situation, in turn, can lead to significant social and economic challenges for the country. Therefore, by exploring the factors associated with childbearing desires, or the lack thereof, valuable insights can be provided to address existing ambiguities and remove barriers to childbearing. This study aimed to fill this gap by investigating childbearing desires and associated factors in northeastern Iran in 2022, offering essential insights in the context of recent policy shifts and demographic trends.

Methods

Study design and participants

The present cross-sectional analytical study was conducted on all men and women receiving care services from comprehensive health centers in cities selected from Khorasan Razavi Province, in the northeast of Iran from 2022 to 2023.

Sample selection

This study was conducted from February 2023 to March 2023 using a multi-stage sampling method. Thus, first, three cities were randomly selected from among the cities of Khorasan Razavi Province. In each selected city, comprehensive health service centers were identified using a multistage random sampling method to ensure an unbiased selection process. These centers were selected based on the population they served, ensuring that the sample accurately represents the city's population receiving healthcare services. Subsequently, based on the determined sample size and the population covered by the selected centers, all households within the selected cities that met the inclusion criteria were chosen through simple random sampling, utilizing a pre-established list of eligible participants. The inclusion criteria were willingness to participate in the study, membership in the health system (Seeb and Sina), married women of reproductive age (11–54 years) and married men, speaking Persian and having the ability to communicate verbally or being literate, being able to read and write, having no hearing problem, living for one year in selected cities of the province at the time of the study and no history of brain and nerve disorders (dementia) or psychological

disorders as self-reported. Subjects who could not answer more than 20% of the questionnaire content and did not complete the questionnaire were excluded from the study.

To estimate the sample size, a similar study [22] was referenced, focusing on the childbearing desire variable ($P=31\%$), with a confidence interval of 0.95, a test power of 0.95 and an error margin of 0.2. The estimated sample size was 731, which was increased to 807 to account for a possible 10% attrition rate (Equation 1).

$$1. \quad n = \frac{\left(z_{1-\frac{\alpha}{2}} + z_{1-\beta}\right)^2 * (p * q)}{d^2} = \frac{(1.96 + 1.64)^2 * (0.31 * 0.69)}{(0.2 * 0.31)^2} = 731$$

Data collection

Demographic questionnaire

This questionnaire included 16 demographic questions, about age, sex, marital status, education, occupation, place of residence, accommodation, comorbidity, number of children, age upon marriage, history of abortion, socioeconomic status, and smoking. Also, a question was asked to assign people to the desired groups: "What are the chances that you have a child in the future?" The possible answers ranged from 4) Very likely, 3) Likely, 2) Unlikely and 1) Very unlikely on a four-point Likert scale. The respondents who answered likely or very likely were considered the group with a childbearing desire, and those who answered unlikely or very unlikely were considered the group with no childbearing desire. Then, each group was presented with the next suitable questionnaire to complete.

To ensure the collection of data at various times and on different days of the week, the researchers conducted visits to health centers in the selected cities on all weekdays, excluding holidays. During these visits, the researchers explained the objectives of the study to potential participants and obtained their oral informed consent. Data were collected using self-administered questionnaires, which participants completed independently. To maintain accuracy and offer assistance if needed, the researchers and their colleagues were present throughout the data collection process, addressing possible questions or concerns. Data collection occurred once and within a consistent research environment.

Questionnaire on reasons for childbearing desire (for those likely to have children in the future)

This questionnaire was developed in light of the related literature and experts' opinions [6, 23] and contained 15 items. Those willing to have children in the future could choose from one to 15 factors suggested as reasons for their childbearing desire. This questionnaire was used by Haerimehrizi et al. and was found to be adequately valid and reliable [22].

Questionnaire on reasons for childbearing desire (for those unlikely to have children in the future)

This questionnaire was also developed in light of the related literature and experts' opinions [6, 23] and contained 24 items. Participants who were unwilling to have children in the future could choose from one to 24 items suggested as reasons for no childbearing desire. Finally, according to the respondent's sex, a specific question was asked. This questionnaire was used by Haerimehrizi et al. and was found to be adequately valid and reliable [22].

Data analysis

The data were analyzed using SPSS software, version 26. Descriptive statistics (frequency and percentage) were used to measure the distribution of qualitative demographic variables and the reasons for desiring or not desiring to have children. For the quantitative variables of the study, the Mean \pm SD were calculated. Two logistic regression models were applied to test the relationship between demographic variables and childbearing desire. model 1 represents a univariate logistic regression model, in which variables with a significance level of $P<0.15$ were selected and incorporated into model 2. Model 2 represents a multiple logistic regression model, in which the relationships between independent variables and the dependent variable were tested simultaneously. The significance level was set at $P<0.05$.

Results

Participants' demographic information

A total of 807 residents from Khorasan Razavi Province, located in the northeast of Iran, participated in this study. The findings showed that 30% of participants desired to have children in the future, while the remaining 70% showed no intention of childbearing.

The participants' demographic information is reported in Table 1. Most participants were female (78.8%), with a mean age of 36.45 ± 9.24 years. Also, most participants held a university degree (39.8%) and reported having a sufficient income (81.2%) (Table 1).

Reasons for childbearing desire

Among the participants willing to have children ($n=242$), the primary reason for childbearing in the future was an interest in children (71.9%) among both men and women. This was followed by having an insufficient number of children (36.3%) and a desire for the next child to be of a specific gender (girl or boy) (35.1%). The frequency of other reasons for childbearing desire, categorized by sex, is shown in Figure 1.

Reasons for no childbearing desire

The findings showed that among participants with no desire to have children ($n=565$), the primary reason was already having enough children (43.7%) among both men and women. This was followed by concerns about the future of children (27.6%) and increasing economic pressures associated with having more children (21.8%). The frequency of other reasons for no childbearing desire, categorized by sex, is shown in Figure 2.

Factors associated with childbearing desire (or the lack thereof)

The results of the logistic regression analysis to test the relationship between demographic variables and childbearing desire are summarized in Table 2. According to the univariate logistic regression model (model 1), variables related to childbearing desire, including age, marital status, accommodation, number of children in the family, history of abortion, and comorbidities, were identified as significant at $P < 0.15$ and were included in the multiple logistic regression model (model 2). After adjusting for the effects of other variables, the variables of age, marital status, and number of children were found to be statistically significant ($P < 0.05$). The regression analysis results showed that the odds of childbearing desire in participants aged over 45 years ($OR=12.5$, 95% CI, 4.38%, 20.94%, $P < 0.001$) were 12.5 times higher, and in those aged 35–44 years ($OR=2.31$, 95% CI, 5.19% 27.99%, $P=0.06$), 2.31 times higher compared to the 16–24 age group (used as the reference group). The odds of childbearing desire in married participants were 9.5 times higher compared to single participants ($OR=9.58$, 95% CI, 4.38%, 20.94%, $P < 0.001$). The regression analysis results showed that with each unit

increase in the number of children, the odds of childbearing desire increased 1.95 times ($OR=1.95$, 95% CI, 1.61%, 2.37%, $P < 0.001$).

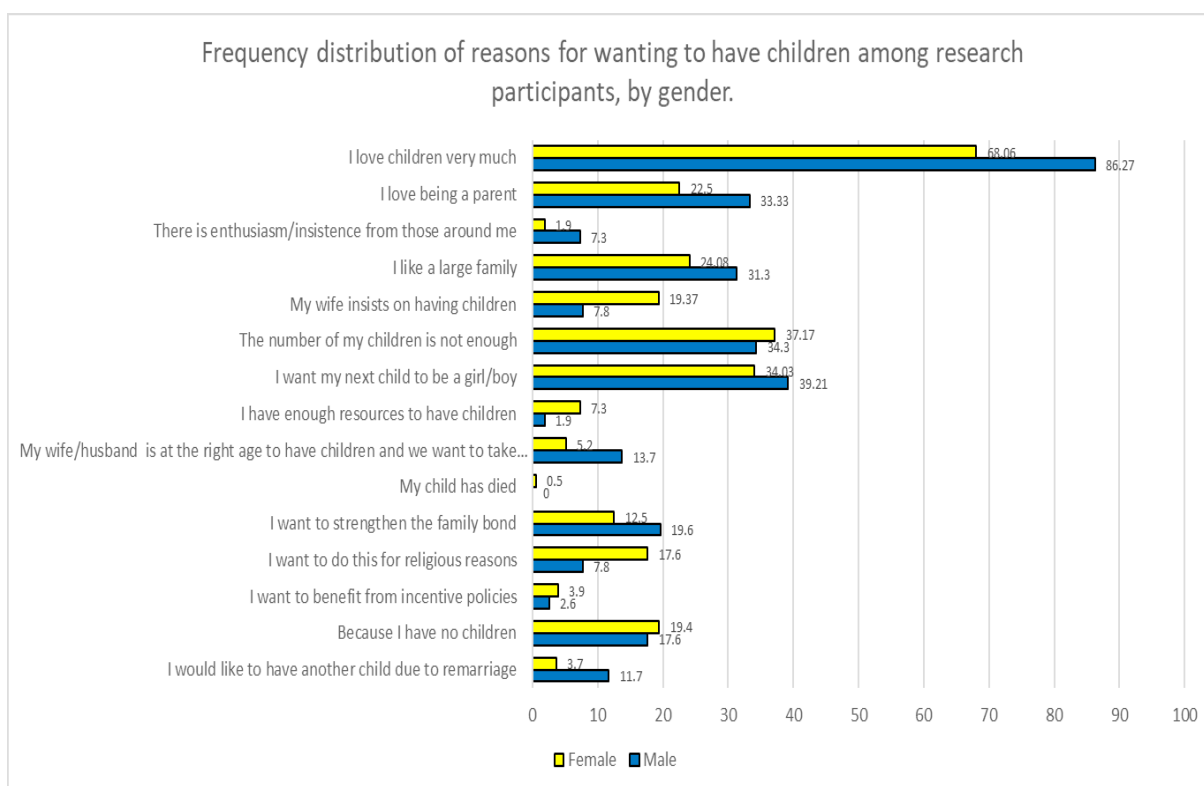
Discussion

Considering the recent changes in Iran's demographic structure, this study aimed to deeply understand and explain the factors influencing childbearing desire (or lack thereof) to improve existing conditions. The main question addressed was the extent to which factors associated with childbearing desire influenced this desire (or lack thereof) in the northeast of Iran. The findings showed that 70% of participants had no childbearing desire in the future. Haerimehrizi et al. reported a no-childbearing desire rate of 26.8% in Iran [22]. Tavousi et al. [4] reported the rate of no childbearing desire to be 63.2%, while Arasteh et al. [7] found a similar rate of 66.69%, closely aligning with the present study's findings and highlighting the reluctance of the majority of the population to have children. In contrast, Speizer et al. [24] reported significantly lower rates of no childbearing desire among young couples in other countries: 14.21% in India, 5.93% in Kenya, and 1.64% in Ethiopia. These findings differ from the present study, likely due to differences in the target research populations (young couples) and cultural contexts between Iran and these countries. Ramezankhani et al. contended that childbearing desire is not a matter of chance. Instead, it depends on people's perceived needs regarding the consequences of childbearing. If individuals believe that having children will meet or alleviate their perceived needs, they are more likely to desire children [25].

In light of the present findings, the most important reasons for childbearing desire were interest in children, insufficient number of children, and desire for the next child to be a girl/boy. Haerimehrizi et al. also showed that the most important reason for childbearing desire among urban and rural residents of Iran was interest in children [22]. Similarly, Tavousi et al. reported that a major reason for the desire to have children among Tehrani citizens is the absence of children [4]. The experience of parenting and childbearing is a significant emotional experience concerning the human desire for the continuation of generations and survival. Additionally, the presence of a child in the family brings vitality, improves physical and mental health, enhances parents' personalities, and strengthens the family foundation [22].

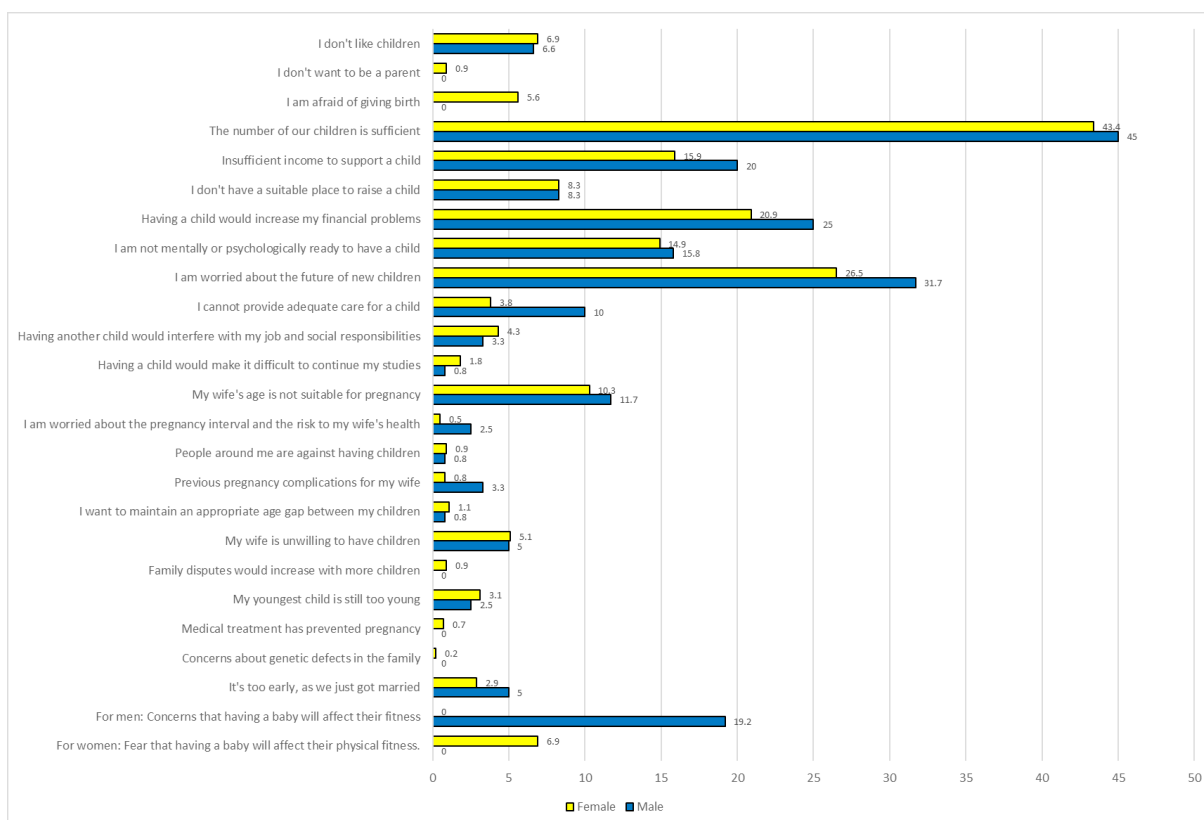
Table 1. Participants' demographic information (n=807)

Demographic Variables	Category	No. (%)/%	No. (%) / Mean±SD
Likelihood of childbearing in the future	Yes	Very likely	118(14.6)
		Likely	124(15.4)
	No	Unlikely	230(28.5)
		Very unlikely	335(41.5)
Age (y)	16-24	-	89(11)
	25-34		257(31.8)
	35-44		276(34.2)
	>45		185(22.9)
Sex	Male	-	171(21.2)
	Female		636(78.8)
Marital status	Single	-	54(6.7)
	Married		753(93.3)
Education status	Below diploma	-	254(31.5)
	Diploma		232(28.7)
	University		321(39.8)
Job status	With income (%)	Retired	8(1)
		Freelancer	122(15.1)
		Manual worker	22(2.7)
		Employee	182(22.6)
	Without income (%)	Housewife	413(51.2)
		Student	33(4.1)
		Unemployed	27(3.3)
Place of residence	Rural	-	72(8.9)
	Urban		735(91.9)
Accommodation	Rental	-	188(23.3)
	Personal		619(76.7)
Socioeconomic status	Less than enough	-	151(18.7)
	Enough		656(81.2)
Smoking	Yes	-	61(7.6)
	No		746(92.4)
History of abortion	Yes	-	152(18.8)
	No		655(81.2)
Comorbidity	Yes	-	205(25.4)
	No		602(74.6)
	Number of children	-	1.73±1.211
	Age of marriage (y)	-	21.62±1.211



JRPH

Figure 1. Frequency of the reasons for childbearing desire among participants according to sex (n=242, female=191, male=51)



JRPH

Figure 2. Frequency of the reasons for no childbearing desire in participants according to sex (n=565, female=445, male=120)

Table 2. Logistic regression analysis results for factors associated with childbearing desire and demographic variables

Demographic Variables	Levels	Simple Regression ¹				Multiple Regression ²			
		P	OR	95% CI		P	OR	95% CI	
				Low	High			Low	High
Number of children		<0.001*	1.97	1.69	2.30	<0.001	1.95	1.61	2.37
Age of marriage (y)	Age	0.79	0.99	0.96	1.02	-	-	-	-
	16-24 ^R	-	-	-	-	-	-	-	-
	25-34	0.092*	1.51	0.93	2.46	0.41	1.25	1.27	4.23
	35-44	<0.001*	3.38	2.05	5.55	0.06	2.31	5.19	27.99
	>45	<0.001*	18.51	8.85	38.74	<0.001	12.05	4.38	20.94
	Female ^R	-	-	-	-	-	-	-	-
Marital status	Male	0.958	1.01	0.69	1.46	-	-	-	-
	Single	0.04*	1.95	0.96	3.96	<0.001	9.58	4.38	20.94
Level of education	Married ^R	-	-	-	-	-	-	-	-
	Below diploma ^R	-	-	-	-	-	-	-	-
	Diploma	0.66	0.92	0.64	1.32	-	-	-	-
Place of residence	University	0.25	0.79	0.54	1.17	-	-	-	-
	Rural ^R	-	-	-	-	-	-	-	-
Accommodation	Urban	0.87	0.95	0.56	1.63	-	-	-	-
	Rental ^R	-	-	-	-	-	-	-	-
Economic status	Personal	0.04*	1.45	0.99	1.98	0.53	0.67	0.44	1.00
	Not enough ^R	-	-	-	-	-	-	-	-
Smoking	Enough	0.29	1.23	0.83	1.83	-	-	-	-
	Yes ^R	-	-	-	-	-	-	-	-
History of abortion	No	0.34	0.74	0.40	1.36	-	-	-	-
	Yes	0.14*	1.69	1011	2.57	0.49	1.17	0.73	1.89
Comorbidity	No ^R	-	-	-	-	-	-	-	-
	Yes ^R	-	-	-	-	-	-	-	-
Job status	Unemployed	<0.001	2.44	1.64	3.66	0.508	1.17	0.73	1.86
	With income ^R	-	-	-	-	-	-	-	-
	Without income	0.42	0.88	0.64	1.19	-	-	-	-

OR: odds ratio; CI: confidence interval.



^RReference category, ¹Model I represents the findings of the univariate logistic regression analysis, ²Model II shows the findings of the multiple logistic regression analysis.

As the findings revealed, the most important reasons for no childbearing desire were having enough children already, concerns about the future of the children, and rising economic issues in society. These three reasons highlight the existence of economic problems in society and how they can cause parents to worry about the future of their children. These worries can ultimately lead to the decision not to have any more children. A body of research in Iran shows that parents' concerns about economic issues and worries about their children's future negatively affect their childbearing desire. In the study by Haerimehrizi et al. the most important reasons for the lack of childbearing desire were concerns about the future of children, economic issues and the perceived sufficient number of children [22]. In another study, Arasteh et al. also showed that couples who were not willing to have any more children were truly concerned about the future of their children [7]. Razavizadeh et al. also showed that parents' concerns about economic and welfare issues reduced their desire for childbearing and increased their preference for having fewer children or delaying childbirth [26]. Motlagh et al. reported that economic problems are the most important reason for the low desire for childbearing [6]. Tavousi et al. showed that childbearing desire was higher among high-income families than among low-income families in Tehran [4]. Chen et al. reported that a key reason for couples with no childbearing desire in Hong Kong was the heavy economic burden imposed by raising children [27]. However, in another study by Chen et al. [28] in China, economic status did not significantly predict childbearing desire and parents with limited income could adjust their living expenses. This finding is not consistent with the present results and may be due to differences in the economic and social conditions between Iran and China.

The present study showed that single participants had a greater childbearing desire than married participants. Tavousi et al. also showed that people have a greater childbearing desire before marriage, but after marriage, when faced with different challenges, the childbearing desire changes [4]. Also, in a report in Hong Kong, the results showed that only 11% of single young residents were unwilling to have children in the future [29].

As the present findings show, an increase in the number of children is associated with a higher likelihood of childbearing desire, indicating a greater desire among large families to have children. In their study, Farrokh-Eslamlou et al. showed that couples raised in larger families had a greater childbearing desire [30]. However, Tavousi et al. [4] in Tehran showed that the likelihood of childbearing desire decreased with an increased number

of children, which contradicts the present findings. This divergence can be due to the different research populations in the two studies.

The results of logistic regression in this study showed that as age increases, childbearing desire also increases. The likelihood of childbearing desire in the age group over 45 was 12.5 times higher than in the age group of 16-24. In their study, Mirzaei et al. showed that childbearing desire was high among people over 40 years old, and it increased with age [31]. Afarini et al. contended that as the women's age increases every year, their chances of having children also increase [32]. However, there are research findings that are inconsistent with the present study. Yoon showed that the likelihood of childbearing desire decreased with age [33]. Also, in Naderipour et al.'s study, no significant relationship was found between age and childbearing desire [34].

There are a number of limitations in the present study. First, the research was conducted cross-sectionally, which limits the claim of a causal relationship. Second, considering that this study was conducted only on women and men living in Khorasan Razavi, the different cultural conditions and traditions governing Iranian societies may lead to a wide range of reasons for varying childbearing desires among different populations (or the lack thereof). Additionally, marital status may have impacted the statistical power of the regression models. This imbalance could constrain the generalizability of the findings, particularly regarding how different marital statuses influence childbearing desires. Although R-squared values were calculated to assess the explanatory power of the models, the small sample size within some categories remains a concern. Future research should aim to include larger and more diverse sample sizes to enable a more robust analysis and ensure broader applicability of the results. Furthermore, the high percentage of university graduates, older participants, individuals with higher income, and those with comorbidities may indicate that the sampling was not sufficiently diverse. This lack of diversity could further limit the generalizability of the study's findings to the broader population. Future studies should endeavor to include a more representative sample to enhance the applicability and robustness of the results across different demographic groups.

Therefore, it is recommended to conduct this study in populations that differ from the dominant culture in the northeast of Iran in terms of culture and tradition.

Conclusion

In general, due to the high level of lack of desire for childbearing, it is necessary to pay more attention to the importance of this issue and its effects on Iranian society. The present findings can provide an overview of the current condition and reasons for the childbearing desire (or lack thereof) among residents of the northeast of Iran. These findings can be used as a starting point for further research on the topic. The high rate of lack of desire for childbearing may indicate a reduced population growth rate, an increase in the aging population, and adverse effects on Iranian society. The present findings can guide officials and policymakers and highlight the necessity of measures to create a suitable environmental and social context to encourage childbearing. This requires the economic support of the youth and the alleviation of worries about the future of children. It is also of utmost importance to establish social and cultural contexts that are conducive to increasing childbearing desire.

Ethical Considerations

Compliance with ethical guidelines

The research related to human subjects complied with all relevant national regulations, institutional policies, and tenets of the Helsinki Declaration and was approved by the Research Ethics Committee of [Gonabad University of Medical Sciences](#), Gonabad, Iran (Code: IR.GMU.REC.1401.136). Informed consent was obtained from the participants after clarifying the research objectives and introducing the researchers.

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Authors' contributions

Conceptualization: Erfan Pourshahri; Methodology: Mahdi Moshki and Nasim Khajavian; Investigation, writing, and final approval: All authors.

Conflict of interest

The authors declared no conflicts of interest.

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