



Examining the Correlation between Fertility Intentions, Reproductive Health, and Health Literacy in Postnatal Women in Zabol, Iran

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Abstract

Background and aims: Fertility is a critical factor influencing population growth and is shaped by various social, economic, and cultural determinants. Health literacy and reproductive health are significant contributors to fertility desires. This study aims to examine the relationship between fertility desire, reproductive health, and health literacy among women in Zabol, Iran.

Methods: This cross-sectional analytical study involved 300 women who had recently given birth in the Labor, Delivery, and Recovery (LDR) unit of Amir Al-Momenin Hospital in Zabol, Iran. Data were collected using a personal characteristics questionnaire, the fertility desire questionnaire, a reproductive health questionnaire, and the Health Literacy Index Assessment (HLIA) questionnaire. Data analysis was performed using the Pearson correlation test, independent t-test, and One-Way ANOVA.

Results: The results indicated that the mean age of the participants was 25.24 ± 5.18 years. Significant negative correlations were identified between reproductive health and fertility desire ($R = -0.126$, $P = 0.02$) as well as between health literacy and fertility desire ($R = -0.216$, $P < 0.001$). A significant positive correlation was observed between health literacy and reproductive health ($R = 0.51$, $P < 0.001$).

Conclusion: The findings suggest that higher levels of health literacy and reproductive health are associated with lower fertility desires among women in Zabol. This trend indicates a shift toward informed and responsible childbearing. Enhancing health literacy may improve reproductive decision-making and maternal and child health outcomes.

Keywords: Postpartum care, Childbearing, Health literacy, Reproductive health, Fertility intentions

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Introduction

Childbearing is a critical component of population growth and stability in any society, significantly influencing both the quantitative and qualitative transformation of communities. It also has a profound impact on various social issues (1). The decline in fertility rates has contributed to a decrease in Iran's population growth. According to the 2016 census, the national population growth rate was approximately 1.24% from 2011 to 2016, and by 2020, this rate had further declined to less than 1% (2). Numerous factors influence fertility desire. Positive experiences, such as the joy of pregnancy and satisfaction with parenthood, tend to enhance women's fertility desire, while challenges like difficult pregnancies and fears surrounding parenthood can diminish it (3). Changes in the economic status of society can also affect couples' desires to have children, mediated by cultural contexts (4).

From a demographic perspective, fertility is a key phenomenon that determines population fluctuations,

and research has established that it is one of the most significant demographic variables (5). Fertility, as a biological phenomenon, varies across societies, particularly among modern women who are increasingly aware of their concerns and issues (4). Recent studies indicate that fertility is shaped by individual choices and values, as well as by cultural and social norms (6).

The health status and comprehension of health information before, during, and after pregnancy directly impact child development. Women have been identified as the primary population for promoting health literacy due to their crucial role in the health of children and families (7). Health literacy refers to individuals' ability to acquire, process, and understand essential health information and services necessary for making informed health-related decisions (8). Insufficient health literacy during pregnancy is associated with poorer health behaviors, higher rates of hospital admissions, and overall lower health outcomes (9).

Despite the existing research in this field, investigating couples' childbearing tendencies remains critically important for two primary reasons. First, understanding fertility preferences and intentions can help predict future fertility rates in societies where discrepancies exist between couples' ideal and actual numbers of children. Second, examining couples' fertility tendencies enhances our understanding of the factors influencing their preferences and desires (10). Fertility desire is a key aspect of fertility preferences (1). Various factors, including social and cultural status, urban or rural residence, educational levels, values, religious beliefs, and ethnic backgrounds, significantly influence individuals' decisions regarding childbearing (11). Moreover, despite the recognized importance of health literacy in enhancing the quality of life and improving maternal health, inadequate health literacy levels are associated with negative health outcomes for women. Women with higher health literacy are more likely to possess comprehensive knowledge about reproductive health, contraceptive options, and prenatal and postpartum care. This knowledge empowers them to make informed decisions about childbearing and to manage their health and that of their children effectively (8).

Childbearing is a crucial component of population dynamics, affecting the structure and dynamics of societies (1). Health literacy and reproductive health can influence the desire for childbearing, while the desire for childbearing can, in turn, motivate improvements in health literacy and a focus on reproductive health (12). Most previous studies have concentrated on only one or two of these variables; however, this study offers a more holistic perspective by examining all three variables simultaneously (13, 14). A deeper understanding of the relationships among these variables can assist couples in making more informed decisions about childbearing. Given the cultural and social differences across various regions of Iran, this study provides valuable insights into the specific context of the study area (15). Understanding these relationships can enable healthcare providers to deliver more targeted care, and enhancing awareness and health literacy can help mitigate high-risk reproductive behaviors (16).

Zabol, located in Sistan and Baluchestan Province, is characterized by traditionally high fertility rates. However, recent improvements in women's health literacy and awareness of reproductive health issues may be reshaping traditional childbearing patterns. In such contexts, the simultaneous examination of "fertility desire," "reproductive health," and "health literacy" is especially important, as it may indicate the onset of a cultural transition in women's reproductive behaviors. This study aims to identify these emerging patterns and provide valuable insights for planning culturally and socially appropriate interventions. In light of declining fertility rates across Iran and national policies emphasizing informed and healthy childbearing, concurrently assessing

key factors such as reproductive health and health literacy can enhance our understanding of postpartum women's fertility decision-making. Unlike most previous studies, which typically examined only one or two variables in isolation, the present study adopts an integrated approach, evaluating all three key constructs simultaneously. Understanding the interplay among these factors may inform the design of effective educational and counseling interventions that align with national population policies. It is important to note that the findings of this study are limited to the specific population under investigation, and caution should be exercised in generalizing the results to the broader Iranian population. Further studies across diverse regions of Iran are recommended to validate and expand upon these findings.

Materials and Methods

This cross-sectional analytical study investigated the relationships among fertility desire, reproductive health, and health literacy among postnatal women attending Amir-Al Momenin Hospital in Zabol City (Eastern Iran) from February to May 2023.

$$n = \frac{z_{1-\alpha/2}^2 S^2}{d^2}$$

To enhance the accuracy of the study, a total of 300 participants were ultimately enrolled. The research population consisted of women who had recently given birth in the Labor, Delivery, and Recovery (LDR) unit of Amir-Al Momenin Hospital in Zabol City, Iran. A convenience sampling method was employed for participant selection.

Inclusion criteria for the study included:

- Age between 15 and 45 years
- Gestational age of 37 to 40 weeks
- Ability to read and write
- No reported physical illnesses
- Having a healthy baby, as determined by a physical examination following delivery

The exclusion criterion was the unwillingness to complete the questionnaire.

Data collection instruments included a personal characteristics questionnaire, the fertility desire questionnaire, a reproductive health questionnaire, and the Health Literacy Index Assessment (HLIA) questionnaire.

The personal characteristics questionnaire gathered demographic information (mother's age, age at marriage, education level, employment status, insurance status, income level, place of residence, and ethnicity) as well as obstetric information (age at first pregnancy, number of pregnancies, number of births, number of abortions, and number of living children).

The researcher-developed fertility desire questionnaire comprised 10 items utilizing a 10-point Likert scale, where responses ranged from "I completely agree" (5) to "I completely disagree" (1). Higher scores on this

questionnaire indicated a greater fertility desire, with total scores ranging from 10 to 50.

The HLIA questionnaire was designed in 2013 for Iranian adults and consists of 33 items across five domains: access (6 items), reading skills (4 items), understanding (7 items), evaluation (4 items), and decision-making/application of health information (12 items). Scoring for this tool is based on a 5-point Likert scale, with total scores ranging from 33 to 165. To convert the raw scores to a 0-100 scale, the minimum possible raw score for each domain is subtracted from the raw score, and this result is then divided by the difference between the minimum and maximum possible raw scores for that domain. The overall health literacy score is calculated by summing the scores of all domains (scaled from 0 to 100) and dividing by the number of domains (17). The reliability of the HLIA questionnaire has been established, with a Cronbach's alpha coefficient ranging from 0.72 to 0.89. Health literacy scores are categorized as follows: 0 to 50 indicates poor health literacy; 51 to 66 indicates insufficient health literacy; 67 to 84 indicates sufficient health literacy; and 85 to 100 indicates excellent health literacy (18).

The reproductive health questionnaire consisted of 5 items assessed using a 5-point Likert scale, with responses ranging from "very low" (score 1) to "very high" (score 5). The five items evaluated included:

1. Level of satisfaction with marital relations
2. Level of participation in pregnancy-related decisions
3. Awareness of pregnancy prevention methods before marriage
4. Awareness of pregnancy prevention methods after marriage
5. Access to contraceptives

This researcher-developed questionnaire yielded scores ranging from 5 to 25, with higher scores indicating better reproductive health. The reliability of this questionnaire was evaluated in a study by Zanjani et al., who reported a Cronbach's alpha correlation coefficient of 0.85 for the reproductive health areas (19). To ensure the scientific validity of this tool, it was reviewed by five experts in the field, and their feedback was incorporated into the final version. Additionally, to assess the clarity of the questions (face validity), the questionnaire was administered to 15 women attending the gynecology department after giving birth (who were not part of the study). Their comments regarding the comprehensibility and clarity of the questions were taken into account, leading to necessary revisions.

The sample size was determined based on the research conducted by Zadeahmad et al utilizing a sample size formula. Considering an average fertility desire of 46.09 ± 6.9 , with a 95% confidence level and an accuracy of 0.8, the minimum required sample size was estimated to be 285 participants (20).

In this study, the reliability of the data collection tools was assessed through internal consistency. The Cronbach's alpha values confirmed the reliability of the questionnaires

as follows:

- Fertility desire questionnaire: 0.66
- Reproductive health questionnaire: 0.84
- HLIA questionnaire: 0.98

Sampling for this study was conducted after obtaining approval from the Ethics Committee of Zabol University of Medical Sciences (IR.ZBMU.REC.1401.101). Following self-introduction, the researchers explained the study's methodology and objectives to the participants, after which informed consent was obtained. Questionnaires were administered approximately two hours after delivery to facilitate easier access to the participants. Sampling continued until the predetermined sample size of 300 individuals was reached. Data analysis was performed using SPSS software version 18, employing both descriptive statistics (including absolute and relative frequencies, mean, and standard deviation) and inferential statistics (including Pearson correlation, independent t-tests, and analysis of variance).

Results

The mean age of the participants was 25.24 ± 5.18 years. The demographic information of the study participants is summarized in Table 1.

Table 2 shows the mean scores of fertility desire, health literacy and reproductive health of the participants.

The relationship between fertility desire, reproductive health, and health literacy among postnatal women is presented in Table 3. The results of this study showed that with an increase in reproductive health and health literacy,

Table 1. Frequency distribution of demographic characteristics

Variable	Frequency (%)
Mother's age	Less than 18
	48(16.0)
	18-22
	41(13.7)
	22-26
	85(28.3)
Mother's age of marriage	26-30
	75(25.0)
	30-34
	39(13.0)
Mother's education	More than 34
	12(4.0)
	Less than 18
	125(41.7)
	18-22
Mother's occupation	91(30.3)
	22-26
	52(17.30)
	26-30
Level of income	29(9.7)
	More than 30
	3(1.0)
Place of residence	non-diploma
	88(29.3)
	Diploma
Level of income	138(46.0)
	University
Place of residence	74(24.7)
	Housewife
	243(81.0)
Level of income	Employed
	57(19.0)
	Optimal
Place of residence	156(52.0)
	Relatively favorable
	107(35.7)
Level of income	Undesirable
	37(12.3)
	City
Place of residence	210(70.0)
	Village
	90(30.0)

Table 2. The mean scores of fertility desire, reproductive health, and health literacy

Variable	Mean $\pm$ SD
Fertility Desire	27.60 $\pm$ 6.66
Reproductive Health	15.92 $\pm$ 3.98
Health Literacy	66.41 $\pm$ 18.51

fertility desire decreases. Additionally, with an increase in health literacy, reproductive health also increases.

Table 4 presents the relationship between the participants' demographic information and their fertility desires, reproductive health, and health literacy.

Discussion

The phenomenon of fertility is influenced by various biological, social, and cultural factors, and it can vary significantly across different societies. In modern contexts, women who possess better awareness of their reproductive health and rights often exhibit different fertility desires compared to their counterparts. Given the limited research in this area within Iran, the current study aimed to explore the relationship between the fertility desire of postnatal women and their reproductive health and health literacy.

In the study conducted by Zadeahmad et al., which examined fertility desire alongside health literacy and spiritual health, the mean score for fertility desire was reported as 46.09 $\pm$ 6.9 (20). This finding contrasts with the results of the present study, which may be attributed to methodological differences. Zadeahmad et al. utilized a fertility desire questionnaire derived from the Enayat questionnaire, which contains 27 items, whereas the current study employed a researcher-developed tool with only 10 items. Furthermore, Zadeahmad et al. identified a positive and significant relationship between fertility desire and spiritual health ($P=0.003$), but did not find a statistically significant relationship between fertility desire and health literacy (20). This is contrary to the findings of the present study, which demonstrated a statistically significant inverse relationship between health literacy and fertility desire; specifically, as health literacy scores increased, fertility desire decreased. Notably, the mean score of health literacy in Zadeahmad et al.'s study was 42.9 $\pm$ 5.8, indicating insufficient health literacy among participants, while the current study reported a mean health literacy score of 66.41 $\pm$ 18.51, suggesting a more adequate level of health literacy (20). Additionally, the context of the studies differed, with Zadeahmad et al. conducting their research in health centers, while the present study was conducted in a hospital setting (20).

The findings align with those of Tavananezhad et al., who investigated the relationship between health literacy, women's empowerment, and the tendency towards pregnancy. Their study revealed a statistically significant relationship between health literacy and women's empowerment, indicating that as women's empowerment

Table 3. The relationship between fertility desire, reproductive health, and health literacy

Variable		R	P value ^a
Fertility Desire	Reproductive Health	-0.126	0.021
Fertility Desire	Health Literacy	-0.216	<0.001
Reproductive Health	Health Literacy	0.51	<0.001

^a Pearson correlation test

increased, so did their health literacy ($P<0.001$) (21). This outcome is consistent with the results of the present study, reinforcing the importance of women's empowerment in enhancing health literacy. Moreover, research by Holton et al. explored the correlation between women's health, expectations regarding childbirth, and the consequences of having children. Their findings indicated that 74% of respondents cited physical problems as a significant barrier to childbearing. Additionally, individuals with better general health were found to be more likely to consider having children, and those with better mental health reported improved physical conditions and greater life satisfaction ($P<0.001$) (22). These results further corroborate the findings of the present study, highlighting the intricate links between health status, reproductive health, and fertility desires among women.

The study conducted by Nodoshan et al. investigated the relationship between pregnancy health literacy and pregnancy status in recently postpartum women, reporting a mean health literacy score of 54.67, which indicates insufficient health literacy (23). In contrast, the present study found a mean health literacy score of 66.41, suggesting sufficient health literacy among participants. The observed differences in mean health literacy scores may be attributed to the different types of questionnaires employed; Nadushan et al. utilized the MHLAPM HLIA questionnaire, which has a scoring range of 14 to 70, while the current study relied on a researcher-made questionnaire (23).

Furthermore, the results from Peyman et al. demonstrated a statistically significant relationship between women's health literacy and their self-efficacy regarding physical activity ($P<0.01$), which aligns with the findings of the present study (7).

In terms of fertility desire, Zadeahmad et al. found that fertility desire scores increased with each additional year of age, a finding that is not consistent with the present study (20). However, the results of Ghorbani et al.'s study support the current findings, indicating a different trend (24). Khadivzadeh et al. highlighted a significant relationship between women's education and their fertility desires (25), which is consistent with the present study's results. Additionally, Zare et al. reported that higher educational levels in women correlate with lower motivation for childbearing (26). Regarding the impact of employment on childbearing, a study by Hajizadeh Bandeghara et al. revealed that working women are twice as likely to express a desire to have children compared to housewives (27). This finding contrasts with various studies suggesting

Table 4. The relationship between demographic characteristics and fertility desire, reproductive health, and health literacy

Variable		Frequency (%)	P value		
			Fertility Desire	Reproductive Health	Health Literacy
Mother's age	Less than 18	48(16.0)	<0.001 ^a	<0.001 ^a	<0.001 ^a
	18-22	41(13.7)			
	22-26	85(28.3)			
	26-30	75(25.0)			
	30-34	39(13.0)			
	More than 34	12(4.0)			
Mother's age of marriage	Less than 18	125(41.7)	<0.001 ^a	<0.001 ^a	<0.001 ^a
	18-22	91(30.3)			
	22-26	52(17.30)			
	26-30	29(9.7)			
	More than 30	3(1.0)			
The age of the mother's first pregnancy	Less than 18	77(25.7)	<0.001 ^a	<0.001 ^a	<0.001 ^a
	18-22	98(32.7)			
	22-26	74(24.7)			
	26-30	37(12.3)			
	More than 30	14(4.7)			
Mother's education	Non-diploma	88(29.3)	<0.001 ^a	<0.001 ^a	<0.001 ^a
	Diploma	138(46.0)			
	University	74(24.7)			
Mother's occupation	Housewife	243(81.0)	<0.001 ^b	<0.001 ^b	<0.001 ^b
	Employed	57(19.0)			
Level of income	Optimal	156(52.0)	0.031 ^a	0.329 ^a	<0.001 ^a
	Relatively favorable	107(35.7)			
	Undesirable	37(12.3)			
Place of residence	City	210(70.0)	0.102 ^b	<0.001 ^b	<0.001 ^b
	Village	90(30.0)			
Health insurance	With	263(87.7)	0.031 ^b	0.501 ^b	<0.001 ^b
	Without	37(12.3)			
Number of pregnancies	1	132(44.0)	0.030 ^a	0.074 ^a	0.002 ^a
	2	92(30.7)			
	3	40(13.3)			
	4	20(6.7)			
	5	8(2.7)			
	6	4(1.3)			
	7	2(0.7)			
	8	2(0.7)			
Number of births	1	163(57.0)	0.680 ^a	0.096 ^a	0.022 ^a
	2	84(28.0)			
	3	30(10.0)			
	4	14(4.7)			
	5	7(2.3)			
	6	2(0.7)			
Number of abortions	0	241(80.3)	0.480 ^a	0.625 ^a	<0.013 ^a
	1	43(14.3)			
	2	12(4.0)			
	3	3(1.0)			
	4	1(0.3)			

^a One-Way ANOVA; ^b The independent-sample *t*-test.

that women's employment generally leads to a decreased inclination towards childbearing.

Zanjani's research found an inverse and weak correlation between reproductive health and the mother's age at first pregnancy (19), which does not align with the present study's findings. Similarly, Zadeahmad et al. reported no statistically significant relationship between health literacy and the mother's age, which is at odds with the results of the current study. They also noted a significant relationship between education level and health literacy (20). This is corroborated by multiple studies that have established a direct and significant relationship between educational attainment and health literacy (28,29).

Individuals with higher health literacy possess a nuanced understanding of the multifaceted challenges associated with childcare and its effects on both physical and mental health for parents. This comprehension can lead to more thoughtful decision-making regarding the timing and number of children they wish to have. Such individuals often prioritize personal development, career advancement, or higher education, opting to reach their personal and professional milestones before considering childbearing (30).

The findings from the present study indicate an inverse relationship between health literacy and fertility desire; however, this should not be misconstrued as an opposition to childbearing. Rather, increased health literacy and awareness can enhance the quality of women's decisions related to fertility. Notably, in Zabol—a region traditionally known for high fertility rates—higher health literacy levels correlated with a reduced desire for childbearing. This trend may stem from a greater understanding of the challenges associated with pregnancy, maternal responsibilities, economic implications, and knowledge of contraceptive methods. While some pronatalist policies have historically aimed to boost birth rates, the results of this study emphasize the significance of fostering healthy, informed, and responsible childbearing practices, which align with Iran's contemporary demographic strategies. Women with elevated health literacy may choose to delay childbearing until they feel adequately prepared in terms of physical, psychological, and economic readiness, thereby endorsing the concept of responsible reproduction. Such patterns can contribute to healthier offspring, lower neonatal mortality rates, improved maternal health, and enhanced social sustainability.

The observed shifts in women's health literacy and reproductive awareness in Zabol may indicate the onset of a cultural transition in fertility behaviors, even in a region historically characterized by high fertility rates. In light of these findings, policymakers are encouraged to develop targeted health literacy programs that not only provide accurate reproductive health education but also acknowledge the cultural significance of motherhood and family within Iranian society. These initiatives should address women's concerns regarding childcare, work-life balance, and facilitate informed reproductive decision-

making. It is important to note that this study employed a cross-sectional design and was conducted within a single healthcare center in Zabol; therefore, the generalizability of the findings to the broader Iranian population is limited. Cultural, social, and economic disparities across different regions may influence the relationships among health literacy, reproductive health, and fertility desire, underscoring the necessity for further research in diverse settings.

Conclusion

The findings of this study indicate that in Zabol, higher health literacy is associated with a lower desire for childbearing. This trend aligns with national policies that advocate for responsible and informed fertility choices. Rather than opposing the notion of childbearing, enhanced health literacy empowers women to make informed decisions regarding their reproductive health, thereby contributing positively to maternal and child health outcomes and improving the overall quality of the future population. It is essential to approach the generalization of these results with caution, as the study's focus on a specific region may limit the applicability of the findings to other areas. The unique cultural, social, and economic contexts of different regions in Iran can significantly influence the interplay between health literacy, reproductive health, and fertility desire. Therefore, further research is necessary to explore these dynamics in various settings and to validate the findings on a broader scale.

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Competing Interests

The authors declare that there are no conflicts of interest to disclose.

Ethical Approval

Sampling for this study was conducted after obtaining approval from the Ethics Committee of Zabol University of Medical Sciences

(IR.ZBMU.REC.1401.101). Following self-introduction, the researchers explained the study's methodology and objectives to the participants, after which informed consent was obtained.

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