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# Investigating the effect of health literacy level on improving the quality of care during pregnancy in pregnant women covered by health centers

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## Abstract:

**BACKGROUND:** Health literacy is the capacity to acquire, process, and understand basic information and services necessary for appropriate health decisions. Given the importance of health literacy in women, the aim of the present study was to determine the effect of health literacy level on improving the quality of care during pregnancy in pregnant women.

**MATERIALS AND METHODS:** The present study was a cross-sectional analytical study. In this study, 130 women referred to Yazd health centers were examined. Health literacy questionnaires and a researcher-made checklist of the quality of pregnancy care were used to gather information. The researcher-made checklist of the quality of pregnancy care was in accordance with the standard protocol of the Ministry of Health and Medical Education, entitled Integrated Health Care for Pregnant Mothers, which was validated and reliable. SPSS statistical software version 19 and *t*-test and ANOVA statistical tests were used to analyze the data.

**RESULTS:** According to the findings, the average score of health literacy in pregnant women was 74.09, which showed that the level of health literacy was in the marginal or border range. People with higher health literacy received significantly more prenatal counseling than other women and had a planned pregnancy ( $P = 0.04$ ).

**CONCLUSION:** The level of health literacy in pregnant women is unfavorable. Given that the high level of health literacy in women in society can lead to an increase in the quality of pregnancy care, so to increase health literacy in women, it is recommended that regular training in society by health-care providers be given more attention.

## Keywords:

Health-care quality, health literacy, pregnancy

## Introduction

Literacy involves a set of complex abilities to understand and apply the basic system of a culture for personal development and social development, which is seen as a diverse set of skills needed by an adult to function and behave in society. One of these skills is health literacy, which includes a set of reading, listening, analysis, decision-making, and the ability to

use these skills in health situations. Health literacy is the result of the joint efforts of social and individual factors and addresses the concerns and dimensions of literacy in the field of health. Health literacy has now been introduced as a global issue in the last century.<sup>[1]</sup> The World Health Organization has identified health literacy as one of the biggest determinants of health, advising countries around the world to establish an association to monitor and coordinate strategic activities to improve health literacy.<sup>[2]</sup>

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Health literacy is an important element in a woman's ability to engage in health promotion activities and prevention for herself and her children. Without an adequate understanding of information, health care for a woman will be difficult or impossible, and conscious decisions can lead to positive health outcomes for herself and her family.<sup>[3]</sup> In mothers, paying attention to health literacy status is important for two reasons: first, pregnancy may be a woman's first exposure to the health-care system; therefore, working on this complex system for the first time can be complicated, even with sufficient literacy skills, while women with low literacy experience significantly more problems learning new information and following guidelines and second, a woman's health status and her understanding of health information directly affect her baby before pregnancy, during pregnancy, and during the years of growth and development. According to a study by Montazeri *et al.* in Iran, half of the Iran's population have limited health literacy, and this restriction is more common in vulnerable groups, including the elderly, housewives, unemployed people, and people with limited general literacy.<sup>[4]</sup>

Since women's education is vital to improving the health of children and their families, women have been identified as the primary population for the primary emphasis on increasing health literacy.<sup>[3]</sup> Although it is not yet clear to what extent health literacy affects health outcomes, there are many reasons why many of the unpleasant outcomes related to health are due to poor health literacy.<sup>[1]</sup> According to a study by the American Center for Health Care Strategies, people with low health literacy are less likely to understand written and spoken information provided by health professionals and follow the instructions given. Therefore, they are in a poorer health condition, have more hospitalizations and visits to the doctor, have poor self-care skills, have less preventative care, and therefore incur higher medical costs.<sup>[1]</sup> A nationwide survey conducted in the United States estimated the prevalence of inadequate health literacy at 48%. In this study, only 11% of the adults had adequate health literacy. In the only study conducted in Iran in this field, 56.6% of people had a high level of health literacy.<sup>[1]</sup> According to a study conducted by Reban *et al.*, only 32.4% of women in Iran had good health literacy, and most of them had poor levels of health literacy.<sup>[5]</sup> The results of a meta-analysis study examining the state of health literacy in Iranian society emphasize that most Iranians do not have adequate levels of health literacy. The results also showed that only 27% of women had adequate health literacy levels.<sup>[6]</sup> The results of a study by Jovic-Vranes showed that 44% of women had poor health literacy levels.<sup>[7]</sup> Improving maternal health is one of the important goals of the Millennium Development Goals. Pregnancy is one of

the most sensitive periods in a woman's life, and most deaths during pregnancy or during childbirth can be prevented. Therefore, providing quality health care during pregnancy and postpartum is one of the basic strategies in promoting the health of mothers and their children and preventing their mortality.<sup>[8]</sup> Inadequate and insufficient care during pregnancy leads to an increase in cases such as preterm birth, low birth weight babies, and increased maternal and child mortality.<sup>[9]</sup> Every year in the world, half a million mothers die due to pregnancy and birth problems. About 4 and a half million stillbirth and 3 million infant deaths occur due to pregnancy and childbirth problems. Therefore, regular pregnancy care plays a significant role in reducing maternal and child mortality.<sup>[10]</sup>

Therefore, considering the importance of women's health literacy and the important role of women in promoting health and disease prevention in themselves and their children, and also, considering that it seems that little research has been done on the relationship between women's health literacy status and the quality of pregnancy care in our country, the present study examines the effect of health literacy level on improving the quality of care during pregnancy in pregnant women covered by health centers.

## Materials and Methods

The present study was a cross-sectional descriptive analytical study. Data collection in this study was cross-sectional. After obtaining the code of ethics (IR.IAU.KERMAN.REC.1398.011) and obtaining the necessary licenses for sampling, the researcher first received a list of all health centers from the Yazd Health Department. Then, based on the number of research samples, four health-care centers with the criteria for entering the study were selected by a simple random method based on the table of random numbers. The required number of samples from all selected health centers was determined according to the population covered by them. Due to the possibility of dropping the selected samples, three more people were selected from each center. In this study, for sampling, the researcher used a simple random method that was appropriately allocated based on the population covered by the centers of the number of samples and used married women who had the criteria to enter the study.

The number of samples in this study was 123 people according to similar articles and the following formula (including  $r = 0.3$  and test power = 90).

Considering the probability of selected samples falling, the number of samples increased to 130 people. Then, the studied samples entered the study if they had entry

criteria and completed written consent. Participants in the study were assured that their information would be kept confidential.

Health centers were selected as sampling sites if they had a household population of more than 3000 people (according to the Yazd Health Department). The criteria for entering the study were Iranian citizenship and having health records for prenatal care. It should be noted that pregnant women participated in this study regardless of the number of pregnancies.

A questionnaire was used to collect information. The questionnaires used were Test of Functional Health Literacy in Adult to measure health literacy and researcher's checklist made in accordance with the standard protocol of the Ministry of Health and Medical Education entitled "Integrated Health Care for Pregnant Mothers" to check the quality of pregnancy care. The functional health literacy questionnaire consists of three parts. Section 1: Demographic information includes age, occupation, and education. Section 2: This section has 10 explanations or health instructions and measures a person's ability to understand and act on the advice given by doctors and health educators. This section requires calculations. Section 3: Examines people's reading comprehension. This section contains three texts and measures the participants' ability to read and understand. In each of Sections 2 and 3, the individual score is between 0 and 50. The total score of health literacy, which is between 0 and 100, is calculated from the sum of the scores of Sections 2 and 3. Finally, each person's functional health literacy score is categorized into the following levels: insufficient level (59–0), marginal (borderline) (160–74), and adequate (100–75). In 2018, Khalili *et al.* used Cronbach's alpha for the reliability of this questionnaire, which was confirmed with 0.89. Its validity was also confirmed by relevant experts in the fields of statistics and research methods, librarianship, medical information and education, and medical promotion.<sup>[11]</sup>

To check the quality of maternity care, a researcher-made checklist was used to assess the quality of pregnancy care in accordance with the standard protocol of the Ministry of Health and Medical Education under the heading of integrated health care for pregnant mothers. This questionnaire contained two parts: demographic characteristics and quality of pregnancy care.

Demographic characteristics part was include Current pregnancy status, history of previous pregnancy and childbirth, history or current infection to the disease, risk factors in mother or spouse, blood tests and ultrasound, get prepregnancy family planning counseling, perform prenatal care, performing current

pregnancy care (according to care tables), and referral of the pregnant mother during pregnancy and its follow-up. The formal and content validity method was used to determine the validity of the Pregnancy Quality Assessment Questionnaire. First, the researcher extracted the initial questionnaire on the subject of the research by studying the books and articles published in this field, then to investigate the formal validity of the questionnaire (to examine the apparent validity, rationality, attractiveness, eloquence, and conciseness of the questionnaire from the point of view of the target group); 10 qualified women were interviewed and necessary corrections were made in the questionnaire. To determine the validity of the content (examining all aspects and areas of the tool in terms of expertise and the ability of the selected questions to reflect the characteristics of the structure in question) and to examine and determine the indicators of content validity index (CVI) and content validity ratio (CVR), the questionnaires were given to 10 relevant experts and their suggested opinions were applied in the questionnaire. To determine the reliability of the instrument, Cronbach's alpha method was used with an emphasis on internal correlation. Thus, the Quality of Pregnancy Care Questionnaire was given to 30 members of the study population (10 people from each group), and then, Cronbach's alpha coefficient was calculated. The reliability of the questionnaire was confirmed with  $\alpha = 0.89$ .

Descriptive and analytical statistical methods were used to analyze the data. Frequency and mean distributions were used to describe the data, and *t*-test and ANOVA tests were used to express the relationship between variables related to pregnancy care and health literacy of pregnant women. Data were analyzed using statistical software package IBM SPSS version 19 (IBM, USA, 2007).

## Results

According to the results of the study, the mean age of the participants in this study was 26.4 years. The mean score of health literacy was 74.09 in pregnant women in the research community, which showed the level of marginal or borderline health literacy in pregnant women. Scores indicate poor levels of health literacy in pregnant women. Examining the relationship between demographic characteristics and health literacy, the results showed that the highest average score of health literacy was related to age over 31 years with a level of 76.5 and the lowest average score of health literacy was related to ages 15–20 years with a level of 67.5 [Table 1]. Furthermore, in relation to education, the highest score of health literacy was related to people with master's degree with a rate of 99.5 and the lowest score of health literacy was related to illiterate people with a rate of

49.6. This indicates that the level of health literacy is significant with the level of education of the participants. Regarding the employment of individuals, the lowest score of health literacy was related to housewives with a rate of 73.9 and the highest score of health literacy was for employees with a rate of 88.2. However, there was no significant relationship between the health literacy of pregnant women and people’s occupations ( $P = 0.6$ ).

In terms of prepregnancy family planning counseling, which can indicate a planned pregnancy, the results showed that people with higher health literacy received significantly more prepregnancy counseling than other women and had a planned pregnancy ( $P = 0/04$ ) [Table 2].

Furthermore, the mean score of health literacy in women with appropriate intervals between pregnancies (intervals between pregnancies over 3 years) was significantly higher than other women with intervals <3 years ( $P = 0.001$ ). In examining cases of women’s referrals during pregnancy and timely referral for referral feedback, the highest average health literacy score was for women who followed their referrals fully, but there was no significant relationship between health literacy score and follow-up referrals ( $P = 0/5$ ).

In relation to other items such as number of pregnancies, number of abortions, type of delivery, type of prenatal prevention method, history of drug use, presence of chronic diseases, the results did not indicate a significant relationship with health literacy level.

## Discussion

The results of the present study showed that the level of health literacy of pregnant women in the society was marginal or borderline, which indicates that the level of health literacy is unfavorable in pregnant women.

**Table 1: The relationship between the age of pregnant women and the level of health literacy**

Age range	n	Average health literacy score
15–20 years	21	67.57
21–25 years	40	75.20
26–30 years	42	74.71
More than 31 years	27	76.55
Total	130	74.09
Significance		0.2

**Table 2: Relationship between prepregnancy counseling and health literacy levels**

Prepregnancy counseling	n	Average health literacy score
Get prepregnancy counseling	30	79.23
No prepregnancy counseling	100	72.56
Total	130	74.09
Significance		0.04

In this regard, Ghanbari *et al.* in their study entitled “Study of health literacy of pregnant women under the auspices of health centers of Shahid Beheshti University of Medical Sciences” said that 30% of pregnant women have insufficient health literacy, 24.6% have borderline health literacy, and 45.4% have adequate health literacy.<sup>[3]</sup> This study is somewhat consistent with the results of our study. However, Jacqueline *et al.* in their study entitled “Assessing the level of health literacy and awareness in women who became pregnant for the first time,” concluded that the health literacy score in pregnant women was normal, and there was a significant relationship between women’s awareness and their level of health literacy.<sup>[12]</sup> The normal level of health literacy in Jacqueline’s study can be attributed to differences in health care in different communities. Furthermore, Abdolmalaki *et al.* conducted a study in Mashhad in 2018 to examine the level of women’s health literacy and showed that the level of women’s health literacy is marginal or borderline and a high percentage of women have insufficient health literacy.<sup>[13]</sup>

Examining the relationship between the health literacy of pregnant women and demographic characteristics shows a significant relationship between the level of health literacy and the level of education of pregnant women. In other words, people with a higher degree of education have better health literacy and better understand and use health information and instructions. In this regard, the study of Sorlie *et al.* showed that on average, health literacy increases with increasing level of higher education.<sup>[14]</sup> Chou *et al.* also identified education as a variable affecting health literacy.<sup>[15]</sup> Problems with lower education in connection with written communication or limited familiarity with medical terms are likely to be characteristics that impair people’s ability to successfully interact with the health-care system. As a result, health-care workers need to adjust their relationships with pregnant women based on their actual health literacy.<sup>[16]</sup> Furthermore, a study by Lupatteli *et al.* Entitled “Investigating the Relationship between Health Literacy Levels and Understanding Health Risks and Behaviors during Pregnancy” found that women with lower health literacy levels had lower understanding of drug risks and therefore were at risk. Therefore, physicians should pay special attention to the patient’s ability to understand health information.<sup>[17]</sup> A recent systematic review of health literacy by the Agency for Health Care Research Quality in 2011 found that low levels of health literacy were a major problem in the United States. This is especially true for people with a lower level of education than a diploma. According to the report, years of study are a strong predictor of health literacy. In the US national health literacy study, more than three-quarter of respondents who did not complete high school education had “Less than baseline

or baseline" health literacy scores, while health literacy scores were 13% in people with 4 years of university education.<sup>[3]</sup> The level of health literacy in people with higher education confirms the role of education in the level of health literacy. Therefore, the level of education of women is a strong predictor of health literacy.<sup>[18-21]</sup> In relation to people's jobs, the lowest score of health literacy was related to housewives and the highest score was related to employed people. However, there was no significant relationship between women's health literacy and occupational employment ( $P = 0.6$ ). The results of Ghanbari's research have not shown a significant relationship between job and health literacy level of pregnant women.<sup>[3]</sup>

Furthermore, in the present study, the highest average score of health literacy was related to age over 31 years and the lowest average score of health literacy was related to the age of 15–20 years, but this relationship was not significant ( $P = 0.2$ ). While the study of Ali Safari *et al.* shows a significant relationship between age (under twenty years) in pregnant women and health literacy,<sup>[22]</sup> studies by MClaghlin *et al.* and Anders *et al.* also did not report a significant relationship between age and health literacy of pregnant women.<sup>[23,24]</sup> Examining the relationship between health literacy and women's reproductive components, the results showed that women with higher health literacy received significantly more counseling than other women before pregnancy and had a planned pregnancy. Prepregnancy care assesses the risks of pregnancy and seeks to improve diagnostic, therapeutic, and pharmacological interventions by providing training and counseling. The purpose of prepregnancy services is to create a safe pregnancy, maintaining, and ensuring the health of the mother and fetus. Therefore, all women should plan before pregnancy and use care services to identify and diagnose risk factors in pregnancy in a timely manner. Various studies have shown a positive effect of prenatal care on the degree of neonatal APGAR score, preterm labor and neonatal weight gain, reduced maternal and fetal risks, reduced gestational disorders, and blood sugar control in diabetic women.<sup>[25]</sup> Therefore, considering the importance of planning to strengthen counseling and education (especially in people who do not have a method of contraception or do not have a reliable method of contraception) to reduce unwanted pregnancies and its consequences, it is recommended to pay attention to increasing awareness, education, and increasing the level of health literacy in women in society.<sup>[26]</sup>

Pregnancy care is one of the most important indicators of preventive medicine. Research shows that maternity care reduces maternal and infant mortality and increases maternal and infant health. As a result, it reduces the cost of the health system and is generally one of the

most valuable and economical primary health-care programs.<sup>[9]</sup> According to the results of the present study, women with higher levels of health literacy are more committed and disciplined in referring to health-care centers for pregnancy care, and if they are referred during pregnancy, they will follow their referrals more fully than other women. Therefore, paying more attention to quality of pregnancy care, informing mothers and improving health literacy as an effective strategy to improve maternal health and reduce mortality in maternal and neonatal complications and thus achieve the Millennium Development Goals has needed.

One of the important goals of pregnancy care is to timely detect and diagnose high-risk pregnancies that occur due to a variety of causes and factors. One of these factors is the lack of proper spacing between births. Short or long interval between pregnancies increases the risk for both mother and baby. Mothers' awareness of the appropriate distance between children through counseling and pregnancy care can significantly reduce infant and maternal mortality rates and their complications.<sup>[27]</sup> The results of Safariabadi *et al.*'s (2016) study on the health literacy of pregnant women in Bandar Abbas showed that the health literacy of pregnant mothers was insufficient and borderline, and there was a significant relationship between health literacy and care during pregnancy. However, the results of a systematic review study of Zibellini *et al.* entitled "The effect of health literacy interventions on pregnancy results" indicate that the level of health literacy has a great impact on pregnancy outcomes.<sup>[28]</sup> Furthermore, the study of Reban *et al.* in Sistan and Baluchestan has confirmed the relationship between health literacy and how to care during pregnancy, which is consistent with the results of the present study. Based on the findings of the study, there was a significant relationship between the distance between births and the level of health literacy of individuals ( $P = 0.01$ ). Fortunately, according to the results of this study, most people followed the distance between children, which is consistent with the findings of Bakhshian and Jabbari.<sup>[8]</sup>

## Conclusion

Finally, according to the results of the present study, it can be concluded that there is a close relationship between the level of health literacy of pregnant women and improving the quality of care during pregnancy. Therefore, paying attention to the level of health literacy of women in the society and trying to improve it can play an important and key role in achieving the desired level of quality of pregnancy care and reducing complications and mortality of mothers and infants. Achieving this important goal includes principled and structural planning in the country's health care system.

**Research strengths:** The present study examines the quality of pregnancy care and its relationship with the level of health literacy, while in most studies, the level of women's health literacy has been studied as an independent variable. Furthermore, the collection of pregnancy care data in the present study was based on the integrated health care of pregnant mothers of the Ministry of Health, which is a turning point for the present study.

**Restrictions:** Due to the working hours of health centers, pregnant mothers who were employed or students were less likely to participate in the study.

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### Conflicts of interest

There are no conflicts of interest.

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