

# The Relationship between Maternal Health Literacy and Pregnancy Outcome in Postnatal Wards

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## Abstract

**Introduction:** the most important factor that guarantees the health of mother and embryo during pregnancy is to become informed about prenatal care and follow it. Health literacy is an important and amendable factor in order to improve the access to health information, the relationship with health service providers, and orientation towards the health care system. By promoting health literacy, the undesirable postnatal outcomes can be reduced. **Aim:** this study was conducted with the aim of determining the relationship between maternal health literacy level and pregnancy outcome in postnatal wards of Alzahra Education and Treatment Center in Rasht City. **Methodology:** The present study was a descriptive-analytical research, which was conducted by cross-sectional method in 2017. The researched population included all women hospitalized in the postnatal ward of Alzahra Education and Remedial Center in Rasht city, and the sample size was equal to 191 individuals. The data collection method included the Maternal Health Literacy and Pregnancy Outcome Questionnaire (MHLAPQ) that after confirmation of its validity and reliability, was used for data collection. The data analysis was conducted by means of descriptive statistics, the mean, and standard deviation, Spearman correlation coefficient test, Mann-Whitney test, and Kruskal-Wallis test. **Results:** there was a significant relationship between health literacy and mother's education level ( $p=0.0001$ ), husband's education level ( $p=0.0001$ ), monthly salary level ( $p=0.001$ ), place of residence ( $p=0.001$ ), and previous labor method ( $p=0.004$ ). Regarding the relationship between pregnancy outcomes and health literacy level, the relationship between the score of mothers' general health literacy and the pregnancy type in two groups (natural childbirth and caesarean section) was significant ( $p=0.004$ ). In other words, the score of health literacy was higher in mothers who had a caesarean section. However, the score of health literacy had no significant relationship with other pregnancy outcomes. **Conclusion:** the results of this research indicated that there is a significant relationship between maternal health literacy and caesarean section. In other studied pregnancy outcomes, the positive effect of health literacy was observed, yet this relationship was not significant; however, it indicates the importance of further considering maternal health literacy in health improvement programs.

**Keywords:** Health Literacy, Pregnancy Outcome, Pregnant Women

## Introduction

Health literacy includes a collection of reading, listening, analysis, and decision-making skills as well as the ability to apply such skills to health situations that are not related to the academic years or general reading ability (Peyman et al., 2017; Kamali et al., 2017; Mollakhalili et al., 2014). World Health Organization in a recent report has recognized health literacy as one of the most essential determinants of health (Afshari et al., 2014). Low health literacy has a relationship with various kinds of undesirable outcomes and inappropriate use of health services (Khosravi et al., 2015). In developed countries such as the United States, approximately 90 million people have limited health literacy, thus the rate of hospitalization and use of emergency services have increased and annually, a cost of 69 billion dollars is imposed on health system economics (Tol et al., 2012). Health literacy level in Iran, according to the research conducted by Tehrani. under the title of "Health literacy in 5 provinces" (Bushehr, Tehran, Qazvin, Kermanshah, and Mazandaran), indicated that 28% of the studied people had adequate health literacy, 15.3% had moderate health literacy, and 56.6% had inadequate

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health literacy (Tehrani et al., 2007). Health literacy is one of the most effective factors in women's health (Sajjadi et al., 2016). Maternal health literacy, special awareness, and particular social skills to identify the risk signs, healthy lifestyle, and prenatal nutrition can be effective in pregnancy outcome through improving the quality of prenatal care (Amiresmaili et al., 2013). Health literacy has great importance in the perception of prenatal risks by pregnant mothers (Izadirad & Zareban, 2016). One of the essential issues in midwifery is the pregnancy outcome, which is investigated through different criteria such as timely birth, normal birth weight, premature rupture of membranes, and preterm labor and its complications. Some studies have reported the prevalence of abnormal cases such as preterm labor and low birth weight in 10 percent of pregnancies (Tabandeh & Kashani, 2007). Despite the care provided by health and treatment centers, it seems that some factors prevent mothers from receiving prenatal care properly and promptly. Some of the factors that prevent mothers from visiting the centers to receive such care include mothers' lack of knowledge and health literacy as well as ignorance about how and how many times they should visit the center during pregnancy (Amiresmaili et al., 2013; Tabandeh & Kashani, 2007). There was a significant relationship between neonatal and maternal outcome in pregnancy and labor and postnatal care, which was dependent on the pregnant woman's perception and health literacy. In other words, the first care, number of mother's visits, and acting on the device of the health and treatment system as well as caesarean section rate, preterm labor, fetal death, and breastfeeding had a significant relationship with maternal health literacy level (Kohan et al., 2007). Various factors can affect health literacy; low level of health literacy is related to old age, low salary, and official education years (Tehrani et al., 2007). Education has been regarded as the most effective variable in using health services. Social and economic factors such as literacy level and person's condition in terms of insurance coverage and salary are also effective in pregnancy care and outcome (Maleki & Mazloomzadeh, 2010). Today, a person's role as the central factor in management of his/her health is emphasized (Izadirad & Zareban, 2016). Considering the fact that culture and ethnicity are among the factors influencing the health system, the researcher has attempted to conduct a study to determine the relationship between maternal health literacy level and pregnancy outcome in mothers hospitalized in the postnatal ward of Alzahra Education and Remedial Center in Rasht city, so that, the results can be applied to educational planning in order to promote maternal health literacy, improve mothers' health, and reduce undesirable pregnancy outcomes.

## Methodology

This study was of descriptive-analytical kind. The research population included all mothers who were hospitalized during three months in the postnatal ward (natural childbirth and caesarean section) of Alzahra Hospital in Rasht city. The sample size in this study (equal to 204 individuals) was determined according to the research conducted by Mojoyinola with the confidence level of 95% and power of the test of 90% based on a Two-tailed test. Finally, after calculating the attrition, 191 samples who met the inclusion criteria, including labor after 28 weeks from the last menstrual period (live birth and stillbirth), the mother not being a graduate or practitioner of medicine, and tendency to participate in the study, were included in the research. The sampling method was of random kind, i.e. all visitors who had been hospitalized in the postnatal ward of Alzahra Education and Remedial Center in Rasht city in 2017 for three months (July 23-October 23), and had met the inclusion criteria, were sampled and this process continued for up to 204 samples (the estimated sample size). The data collection was performed using a questionnaire. In order to determine the scientific validity of the questionnaire, the method of content validity was applied, i.e. opinions of 10 professors from midwifery department in Shahid Beheshti Nursing and Midwifery School, Rasht, were used. The reliability of the questionnaire was determined by Cronbach's Alpha coefficient and was equal to 84%.

### *This questionnaire included two parts:*

The first part of the questionnaire was researcher-made and investigated the personal and social factors as well as the information about pregnancy and postnatal period of samples, which was completed through an interview and referring to the hospital record of the hospitalized mother. This part included 27 questions about personal-social information, pregnancy, and postnatal period.

The questions included age, number of children, occupation of mother and husband, education of mother and husband, salary level, place of residence, and factors related to the current pregnancy such as the age of pregnancy according to medical records, number of pregnancies, number of labor, abortion, history of stillbirth, the first prenatal care, number of prenatal visits, the use of Ferrous sulfate, the use of multi-vitamin, the previous and current labor method, if the current pregnancy was wanted or unwanted, abnormal postnatal bleeding according to medical records, and the results of mother's last hemoglobin and hematocrit level after the labor, as well as the information about the newborn baby including baby's weight, first- and fifth-minute Apgar scores, hospitalizing the newborn baby in the intensive care unit, and breastfeeding immediately after birth.

The second part included Maternal Health Literacy and Pregnancy Outcome Questionnaire (MHLAPQ), which was designed and applied in Nigeria. This tool consisted of two parts, mothers' general health literacy as well as health literacy in relation to prenatal care and health literacy in relation to pregnancy outcome. The original tool was translated from English into Persian and then retranslated from Persian to English; then, its validity and reliability were confirmed. Afterward, the questionnaire was completed through an interview.

The first part investigated mothers' general health literacy and included 14 questions (questions 1 to 14), in such a manner that the lowest obtainable score in this part was 14 and the highest one was 64.

The second part of MHLAPQ tool investigated maternal health literacy in relation to pregnancy care and outcome and includes 12 questions from question 15 to question 26. Questions 15 to 21 (7 questions) were related to maternal health literacy in relation to prenatal care, in such a manner that the lowest score in this part was 7 and the highest one was 28. Questions 22 to 26 (5 questions) evaluated maternal health literacy in relation to pregnancy outcome, in such a manner that the lowest score in this part was 5 and the highest one was 20. All these questions were answered by interviewing the research samples. The answers were ranked according to Likert scale from score 1 to score 4 (strongly agree, agree, disagree, and strongly disagree).

In order to qualitatively score according to the viewpoint of statistics professor, the mean, as well as the highest and lowest obtainable scores in each part, were calculated. Then, by considering the obtainable average score, the mean of scores obtained from the research samples was investigated. The high mean of obtainable average score indicated that the level is desirable and the low mean of obtainable average score indicated that the level is not desirable. According to the number of questions in the questionnaire, the lowest obtainable score in the first part, i.e. mothers' general health literacy, was 28 and the highest one was 56. The mean of mothers' general health literacy was 42.91, which was higher than the average score of 39; thus, mothers' general health literacy level was desirable.

In the part of health literacy in relation to prenatal care, the lowest obtainable score was 12, and the highest one was 28. The mean of this part was 21.25, which was higher than the average score of 19; thus, mothers' general health literacy level in relation to prenatal care was desirable. In the part of health literacy in relation to pregnancy outcome, the lowest obtainable score was 6, and the highest one was 20. The mean of mothers' scores was 14.96, which was higher than the average score of 12.5; thus, mothers' general health literacy level in relation to pregnancy outcome was desirable.

Mothers knew the aim of study, and after filling in the written consent form, participated in this research. In order to observe ethical issues, coded, confidential, and anonymous questionnaires were applied. Finally, the collected data were analyzed by SPSS software version 22 and using the indices of descriptive statistics as well as the Spearman test. This research has been approved by the Committee of Ethics in Guilan University of Medical Sciences under the code of IR.GUMS.REC.1396.125.

## Results

After calculating the attrition, 191 mothers hospitalized in the postnatal ward were finally included in the study. This attrition in the number of samples occurred due to the uncertainty about mothers' some answers to the researcher's questions, and according to the viewpoint of the professor of statistics, the calculations were performed on 191 individuals. The findings indicated that most researched units were in the 18-35 age group (83.2%) with the mean and standard deviation of  $43.16 \pm 5.55$ , and researched units over the age of 35 years old (16.8%) were with the mean and standard deviation of  $41.66 \pm 4.32$ . 93.2% of mothers were housewives and 67.5% of the husbands were self-employed. In terms of education, 43.5% of samples had high school diplomas and associate's degrees, and 39.8% of the husbands of researched units had secondary school degree. Furthermore, 67% were on a monthly salary under 1 million tomans, and 53.9% lived in the urban areas. 95.8% and 74.9% had no history of stillbirth and unwanted pregnancy, respectively. 48.7% were nulliparous, and in multiparous women, caesarean section (31.4%) had the highest frequency. 96.3% of mothers were using Ferrous sulfate and 95.8% were using multi-vitamin. Table 1, according to the results of Mann-Whitney and Kruskal-Wallis tests, indicated that mothers' general health literacy had a significant relationship with mother's education level ( $p=0.0001$ ), husband's education level ( $p=0.0001$ ), monthly salary level ( $p=0.001$ ), place of residence ( $p=0.001$ ), and previous labor method ( $p=0.004$ ).

In Table 2 according to the results of Mann-Whitney and Kruskal-Wallis tests, the relationship between mothers' general health literacy score and 6 quantitative and qualitative variables of pregnancy (maternal and neonatal) outcomes was measured. In this regard, the score of mothers' general health literacy was merely significant ( $p=0.004$ ) in terms of the pregnancy type in two groups (natural childbirth and caesarean section). In fact, the score of health literacy was higher in mothers who had a caesarean section. However, the score of general health literacy had no significant relationship with other variables including abnormal postnatal bleeding ( $p=0.00$ ), first-minute Apgar ( $p=0.52$ ), fifth-minute Apgar ( $p=0.188$ ), hospitalizing the newborn baby in the neonatal intensive care unit ( $p=0.489$ ), and the time of first breastfeeding ( $p=0.312$ ).

In Table 3 according to Spearman correlation coefficient test, the relationship between mothers' general health literacy with quantitative variables including the number of children ( $p=0.998$ ), the age of pregnancy ( $p=0.324$ ), number of pregnancies ( $p=0.345$ ), number of labor ( $p=0.847$ ), number of abortion ( $p=0.21$ ), the first prenatal care ( $p=0.253$ ), and number of prenatal visits ( $p=0.004$ ) were measured. Among these variables, only the number of prenatal visits ( $p=0.004$  and  $r=0.209$ ) had a significant correlation with health literacy.

In Table 4, the mean and standard deviation of mothers' general health literacy are equal to  $42.91 \pm 5.39$ , which are higher than the average score of 39. Thus, mothers' general health literacy level was desirable.

In the part of health literacy in relation to prenatal care, the mean and standard deviation were equal to  $20.25 \pm 2.8$ , which were higher than the average score of 19. Thus, mothers' general health literacy level in relation to prenatal care was desirable. In the part of health literacy in relation to pregnancy outcome, the mean was equal to 14.96, which was higher than the average score of 12.5. Thus, mothers' general health literacy level in relation to pregnancy outcome was desirable.

## Discussion

The present research indicated that there was a significant relationship between mothers' education level and health literacy; with the increase in mother's education level, her health literacy level also increases. This finding was in concordance with the studies performed by Tol, Amir Esmaili, Kohan, Ghanbari, Safari, Javadzadeh, Carthery, and La vonne (Tol et al., 2012; Amiresmaili et al., 2013; Kohan et al., 2007; Ghanbari et al., 2012; Safari-Moradabadi et al., 2017; Javadzade et al., 2013; Carthery-Goulart et al., 2009; La et al., 2008). High level of health literacy in highly educated people indicates the role of education in health literacy level (1). Studies by Safari, Muir, Cho, Sudore, and Silva are compatible with the present study (Safari-Moradabadi et al., 2017; Muir & Lee, 2010; Cho et al., 2008; Sudore et al., 2006; Silva et al., 2010). In this regard, education level is considered as a strong predictor of health literacy. The results of study by Berkman on health literacy indicated that low level of health literacy is more obvious in people with lower degrees than the high school diploma (Berkman et al., 2011). There was also a significant relationship between the monthly salary level over 1 million tomans and maternal health literacy. The National Study of Health Literacy in the US indicated that illiterate people and those with low salaries are more likely to be poor, unemployed, or employed in unsteady occupations and have low health literacy (Artinian et al., 2003). Kharrazi reported that there is a significant relationship between the household's monthly salary as well as the education level and health literacy. In fact, mothers with a monthly salary over one million tomans and higher education had a significantly higher level of health literacy, in comparison to other participants (Peyman et al., 2016). The study conducted by Safari indicated that mothers' salary has a significant relationship with the health literacy level (Safari-Moradabadi et al., 2017). The results of study by Ghanbari indicated that with the increase in the household's monthly salary, inadequate and moderate health literacy is reduced and adequate health literacy increases in the studied people (Ghanbari et al., 2012). Perhaps, the significant relationship between the salary level and health literacy can be explained by high salary, good economic and social conditions, the availability to facilities, for example, education and treatment services increases.

The present study indicated that people who live in urban areas have higher level of health literacy, in comparison to people living in rural areas. This result was in concordance with the findings of some researches. In the research conducted by Ghanbari, it was found that there is a significant relationship between people's place of residence and health literacy (Ghanbari et al., 2012). In the study by Kharrazi, it was reported that there was a significant relationship between the place of residence and health literacy. In fact, mothers in urban areas had significantly higher level of health literacy, in comparison to other participants in the study. Therefore, the results of this study agreed with the findings of the present research (Peyman et al., 2016). People in urban areas had higher level of health literacy, in comparison to people in rural areas; perhaps the reasons behind this fact according to the present findings are the further availability to educational facilities and the existence of universities and higher education centers in urban areas, which increase people's awareness about their own health. However, in rural areas, the lack of adequate educational grounds has caused a significant difference between health literacy in urban areas and health literacy in rural areas (Ghanbari et al., 2012). In the present study, there was no significant relationship between using Ferrous sulfate and multi-vitamin and maternal health literacy. However, the results of study conducted by Kharrazi and Izadirad indicated that there is a significant relationship between using Ferrous sulfate and multi-vitamin and maternal health literacy (Peyman et al., 2016; Izadirad et al., 2017). Furthermore, the study conducted by Kohan indicated that women with adequate health literacy had a significant difference in the amount of Ferrous sulfate and Folic acid use (Kohan et al., 2007). In the present study, a significant relationship was found between the types of previous and current labor method and maternal health literacy. Most of the mothers participating in this research had no previous history of pregnancy, and in women with a previous history of pregnancy, caesarean section was more prevalent in comparison to natural childbirth. Perhaps this can be explained by the fact that most researched women had a history of caesarean section. Although in many cases, it is possible that the reason of having the previous caesarean section does not exist in the current pregnancy and labor anymore, at the present, the labor method must once again be caesarean section inevitably. In fact, one of the obvious specifications of the population in the present research is the majority of mothers whose previous labor method has been caesarean section (due to different reasons) and they have no other choice about the labor method at the present. Furthermore, Naseh in a study agreed the present research with the aim of investigating the prevalence of caesarean section, and its reasons concluded that the increase in literacy is along with the increase in caesarean section and it seems that further tension within employed women and requesting this labor method from the physician are some of the effective factors in the prevalence of caesarean section (Naseh et al., 2010). In the study performed by Piri, the rate of caesarean section in employed mothers was reported to be higher in comparison to worker women and housewives. Furthermore, with the increase in mother's education level, the rate of caesarean section increased, in such a manner that the highest and lowest statistics on caesarean section was respectively in women with BA and over (45.1%) and in illiterate women (20.2%) (Piri & Kiani, 2001). Results of this study agreed with the present research. In a study, Ikeako indicated that there is a significant relationship between prenatal care training and choosing the labor method, since women who had been trained chose caesarean section more (Ikeako et al., 2006). However, in a study by Freitas, mothers with higher education

had lower rate of caesarean section in comparison to mothers with lower education (Freitas et al., 2005). From the viewpoint of the researcher, the reason of contradiction between Freitas's study and the present research is perhaps derived from having elective caesarean sections without indication as a result of social and cultural differences between the two societies. Due to the high rate of caesarean section in Guilan Province, this fact may arise from the fear of labor pain, easy and painless labor, and cultural issues. Furthermore, the reason of this conclusion may be related to the fact that mothers with higher health literacy receive further and more regular prenatal care, thus the rate of caesarean section increases. In fact, mothers with higher score of health literacy were under further and more regular prenatal care.

In the present research, there was a significant relationship between husband's education level and the previous labor method, as well as maternal health literacy level. The reason behind this significant relationship may lie in spouses' roles towards each other and educational effects that they achieve from one another. The high level of husband's literacy increases mother's awareness and trains her during the married life. In this research, there was no statistically significant relationship between the age of pregnant mothers and maternal health literacy. Although the rate of health literacy in younger people was higher, this difference was not significant. In the study by (McLaughlin, 2009), no relationship between the age of pregnant mothers and their health literacy was discovered. Furthermore, the results of research conducted by Kharrazi indicated that mother's age has no significant relationship with health literacy (Peyman et al., 2016), which agreed with the findings of the present study. However, the studies by Ghanbari, Safari, and Sahrayi indicated a significant relationship between age and health literacy level. In fact, in people over the age of 30, with the increase in age, the adequate health literacy level increases (Ghanbari et al., 2012; Safari-Moradabadi et al., 2017; Sahrayi et al., 2016). Furthermore, no statistically significant relationship was observed between occupation of mother and husband and maternal health literacy. The results of the present study were in concordance with the study performed by Ghanbari (Ghanbari et al., 2012). The studies by Tehrani and Safari (Tehrani et al., 2007; Safari-Moradabadi et al., 2017) indicated that occupation and health literacy have a significant relationship, while this result was contrasted with the present study. The reason of difference between the present study and study by Safari, may be due to social differences between two societies. In this research, despite controlling the personal- social variables, the score of maternal health literacy was not related to any of maternal and neonatal outcomes. However, only the score of health literacy in relation to prenatal care was related to fifth-minute Apgar and labor method; with increase in the number of prenatal care, the chance of caesarean section increases (odds Ratio=1.257).

Ikeako found a significant relationship between prenatal care and choosing the labor method; women under more regular prenatal care chose caesarean section more (Ikeako et al., 2006). In the study conducted by Mojinyinola, there was no significant relationship between maternal health literacy and pregnancy outcome (Mojinyinola, 2011). In the study performed by Kohan, there was a significant relationship between variables related to pregnancy such as prenatal care and maternal health literacy (Kohan et al., 2007). However, this relationship was not significant in the present study and only in the type of labor method (caesarean section) it was significant. The higher the score of maternal health literacy related to prenatal care is, the higher the fifth-minute Apgar and the chance of newborn's survival and adaptability will be and thus, neonatal complications will be reduced, which indicate the importance of prenatal care in the newborn's health.

This research has been conducted by visiting and face-to-face interviewing with mothers who had been hospitalized in the postnatal ward of Alzahra Education and Remedial Center in Rasht city, and investigating hospital records of mothers and newborns by the researcher. One of the limitations of the present study was the mental state of samples when completing the questionnaire that may affect the answers. In this regard, it was attempted to ask the mother to complete the questionnaire when she was in a physically and mentally good state. Due to the relationship between different personal and social factors and maternal health literacy, as well as the considerable effect of health literacy on maternal and neonatal outcomes, it seems that the most appropriate solution for increasing maternal health literacy level is to focus on the increase of females' access to higher education, and the necessity of training pregnant women in wide dimensions and through different tools to improve prenatal care and give birth to a healthy newborn. Since any research can be a facilitator for future studies and according to the findings of the present research, it is recommended that similar studies on other factors related to maternal health literacy be conducted, and the relationship between factors related to maternal health literacy and pregnancy outcomes in young and old mothers be investigated.

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Table 1: The Relationship between Personal, Social, and Pregnancy Variables and General Health Literacy Score of Mothers Hospitalized in the Postnatal Ward of Alzahra Hospital

Frequency		General health literacy score			
personal, social, and pregnancy variables		Mean	Standard deviation	Median	Significance level
Age	18 to 35 years old	43.16	5.55	42	0.110
	over 35 years old	41.66	4.32	41	
Mother's occupation	Housewife	42.75	5.31	42	0.480
	Employee	44.73	6.12	46	
	Self-employed	46.5	9.19	46.5	
Husband's occupation	Unemployed	40.5	7.78	40.5	0.392
	Employee	44.29	3.22	43.5	
	Worker	41.95	6.12	41.5	
	Self-employed	43.16	5.29	42	
	Other	40	4.24	40	
Mother's education level	Primary school	38.41	4.99	38	0.0001
	Secondary school	40.79	3.87	41	
	High school, diploma, associate's degree	44.73	4.73	44	
	B.A. and over	48.61	4.89	50	
Husband's education level	Primary school	39.31	5.15	39	0.0001
	Secondary school	41.36	4.33	41	
	High school, diploma, associate's degree	45.17	5.19	45	
	B.A. and over	47.64	4.27	49	
Salary level	Under 1 million tomans a month	41.81	5.16	41.5	0.0001
	1 to 2 million tomans a month	45.36	5.34	45	
	Over 2 million tomans a month	44.44	4.82	43.5	
Place of residence	Urban Area	44.28	5.14	43	0.001
	Rural area	41.3	5.25	41	
History of stillbirth	No	42.95	5.38	42	0.668
	Yes	41.88	5.74	41.5	
Use of Ferrous sulfate	No	38.57	6.65	39	0.071
	Yes	43.07	5.28	42	
Use of multi-vitamin	No	40.75	4.86	41	0.299
	Yes	43	5.4	42	
Previous labor method	No	42.98	5.81	42	0.004
	Natural childbirth	40.89	3.72	41	
	Caesarean section	44.07	5.31	44	
Unwanted pregnancy	No	43.27	5.27	42	0.198
	Yes	41.83	5.64	42.5	

\* Mann-Whitney test

\* Kruskal-Wallis test

Table 2: The Comparison between the Mean and Standard Deviation of Quantitative and Qualitative Variables of Pregnancy Outcomes in Terms of the General Health Literacy Score

Statistical indices		General health literacy score			
Quantitative and qualitative variables of pregnancy outcomes (maternal and neonatal)		Mean	Standard deviation	Median	Significance level
Current labor method	Natural childbirth	41.63	5.12	41	0.004
	Caesarean section	43.85	50.4	44	
Abnormal bleeding after current labor	No	42.91	5.39	42	0
	Yes	0	0	0	
First-minute Apgar	Zero to 3	44.17	9.33	44.5	0.52
	3 to 7	41	7.31	40.5	
	7 to 10	42.99	5.08	42	

Fifth-minute Apgar	Zero to 3	42	8.57	38	0.188
	3 to 7	39.29	8.34	40	
	7 to 10	43.07	5.14	42	
Hospitalization of newborn in neonatal intensive care unit	No	42.74	5.16	42	0.489
	Yes	43.43	6.05	43	
Time of first breastfeeding	No	43.52	6.1	43	0.312
	Yes	42.59	4.98	42	

\* Kruskal-Wallis test

\* Mann-Whitney test

Table 3: The Correlation between Quantitative Variables and Mother's General Health Literacy

Quantitative variables	Mother's general health literacy score	
	Correlation coefficient	Significance level
Number of children	00	0.998
Age of pregnancy according to the record	-0.072	0.324
Number of pregnancies	-0.069	0.345
Number of labor	-0.014	0.847
Number of abortion	-0.091	0.210
Time of first prenatal care	-0.083	0.253
Number of prenatal visits	0.209	0.004

\*Spearman correlation coefficient test

Table 4: The Mean and Standard Deviation of General Health Literacy and Health Literacy in Relation to Prenatal Care and Pregnancy Outcome

							Confidence level of 95%
Questions	Mean	Standard deviation	Minimum	Maximum	Median	Minimum	Maximum
General health literacy questions (1-14)	42.91	5.39	28	56	42	42.14	43.67
Health literacy score in relation to prenatal care questions (15-21)	20.25	2.8	12	28	20	19.85	20.65
Health literacy score in relation to pregnancy outcome questions (22-26)	14.96	2.87	6	20	15	14.55	15.27

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