

Comparison of health literacy between pregnant women referring to health care centers and those referring to private offices

ABSTRACT

Background and Objective: Mothers' health literacy during pregnancy expresses social and cognitive skills that motivate and empowers them to receive and use useful knowledge. The purpose of this study was to compare the health literacy between pregnant women referring to health care centers and those referring to private offices

Materials and Methods: This cross-sectional study was performed on 100 pregnant women referred to health centers and 100 pregnant women referred to private clinics in Mashhad, 2017. The Persian S-TOFHLA questionnaire was used to assess health literacy. The collected data were analyzed using Chi 2, t-test tests, and regression logistic analysis.

Results: The pregnant women who referred to health centers and private offices had 44% and 28% of inadequate health literacy, respectively ($p < 0.05$). The variables of age, education, occupation, pregnancy rank, number of live births, gestational age, and household income were significantly correlated with functional health literacy of pregnant women ($p < 0.05$). Also, the variables of household income, gestational age, education, and maternal age were significantly correlated with overall health literacy ($p < 0.05$).

Conclusion: Inadequate health literacy is a relatively common problem among pregnant women. It is imperative that health system staff, including those working in public and private centers, have the skills to consult and evaluate pregnant women in health literacy.

Paper Type: Research Article

Keywords: Health literacy, pregnant women, Health care centers, Private offices.

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Introduction

Nowadays, special attention is paid to the responsibility for health and self-care in modern and developed countries. Access to health information and disease issues is an important determinant of health. People are expected to use this information to promote high levels of health. This requires a high level of health literacy. The Institute of Medicine has defined health literacy as the capacity of an individual to acquire, interpret and understand basic information and health services that are necessary for proper decision making (1).

Health literacy is a new and at the same time old concept. The subject of health literacy has been used in the scientific literature for about 30 years (2). Health literacy represents a range of skills and resources related to individuals' ability to process health-related information (3). According to the World Health Organization (WHO), health literacy is defined as social-cognitive skills that determine people's motivation and ability to access, understand and use information to maintain and promote their health. So, health literacy goes beyond the ability to read books or pamphlets and other written material. Health literacy is a public concern with issues of health promotion from the individual and the environmental aspect, disease prevention, early screening, the continuity of health care and policy-making (4).

Various studies have shown that low levels of health literacy lead to delayed diagnosis, failure to self-care skills, increased use of emergency services, increased hospitalization, increased incidence of various diseases and ultimately increased mortality rates. (5-7). People with low levels of health literacy may experience difficulties reading labels on medications, educational brochures and understanding the risk (8). In fact, low health literacy is associated with

difficulty in understanding health information, less knowledge about disease treatment and less use of preventive health services (3, 9). Low health literacy is also associated with increased morbidity and mortality (10).

Women have been identified and emphasized as the first target population in enhancing health literacy (11). Pregnancy is one of the most sensitive and important stages of women's life. Women in pregnancy as a healthy, natural person develop another human being and need more care following changes in psychological (such as increased anxiety and depression) and physical (such as weight gain and cardiac output). The importance of pregnancy is in that the health and well-being of the mother directly affect the life of another person (12).

The concept of pregnancy health literacy is the use of health literacy in reaching the content and delivery of prenatal care (13). Pregnant mothers' health literacy is important because pregnancy may be the first exposure a woman has to the health system. Moving into this complex system for the first time, even with sufficient literacy skills, can be a difficult task. Moreover, women with lower literacy levels experience significantly more problems learning new information and following tips. A woman's health status and her understanding of health information before pregnancy, during pregnancy, and during the child's development and development years, directly affect her child's health (14).

Health literacy is important for mothers to understand pregnancy risks. One of the most important factors in maintaining a healthy mother in giving birth to a healthy baby is the awareness of prenatal care (15). Women with low health literacy are twice as likely to give birth to low birth weight infants and increasing their health literacy is an important factor in controlling their low birth weight (16). Low birth weight, preterm

birth and neonatal death occur less frequently in mothers with high health literacy (17). In the study of Cho et al., Mothers with low levels of health literacy began prenatal care later, received less care than usual, their infants were more at risk of low birth weight and were admitted to the neonatal intensive care unit (18). In the study by Anders et al., 62% of mothers with good health literacy started folic acid intake in the first trimester of pregnancy, compared with 42% for mothers with low health literacy (19).

Different studies have been done in various cities of Iran to investigate the health literacy of pregnant women. In a survey conducted in five provinces of the country in 2011, the level of adequate health literacy in women was reported to be 25.9% (20). A study in Urmia in 2015 showed that 24% of pregnant women referred to comprehensive health centers had inadequate functional literacy, 25% had borderline literacy and 51% had adequate literacy level (21). The results of a study in Zahedan (2017) on Health literacy level of women in reproductive age showed that 15.5% of them had inadequate health literacy, 41.7% had borderline health literacy and 42.2% had adequate health literacy (22). Also, in a study of pregnant women referring to comprehensive health centers in Mashhad, the mean and standard deviation of maternal health literacy questionnaire was 130 ± 8.46 (23).

Determining the level of maternal health literacy can be a prerequisite for quality improvement and health planning policy. Limited health literacy is not only a problem for the patient but also a challenge for health care providers and health systems (24). In search of the literature, most studies on the health literacy of pregnant women have been conducted on women referred to comprehensive health centers. However, a significant percentage of pregnant mothers go to private centers, including specialist obstetric

and gynecological offices to receive pregnancy care. Therefore, this study was conducted to compare the health literacy of pregnant women referring to comprehensive urban health centers with pregnant women referring to private offices.

Methods

This study is a cross-sectional descriptive-analytical study which was done in 2017. The study sample consisted of 100 pregnant women referring to comprehensive urban health centers and 100 pregnant women referring to private clinics for prenatal care. Inclusion criteria were: Iranian citizenship, read and write ability and having health records for prenatal care. Exclusion criteria included acute visual and hearing impairment, known mental and cognitive impairments, known systemic diseases and high-risk pregnancy and education in medical sciences.

Due to the lack of a similar study in the searches and based on the study of Ghanbari et al (14) who reported 45.4% of clients with adequate health literacy with 95% confidence level and accuracy rate $p = 0.454$ was calculated according to the following formula in at least 73 patients in each group and finally, 100 patients in each group were entered into the study.

$$d=0.113, P=0.454$$

The method was multi-stage cluster sampling. Referring to the Health Center of Mashhad University of Medical Sciences website, information about urban health centers affiliated to each of the five health centers of Mashhad was obtained. One center was selected from each of the five health centers in Mashhad. After referring to these centers, 20 pregnant women were entered in the study through the available method at each comprehensive urban health center. Similarly, statistics of private gynecology offices covered by each of the five health centers of Mashhad were obtained from the Deputy of

Treatment of Mashhad University of Medical Sciences and 1 office was selected from the total number of offices covered by each health center in Mashhad. After referring to this office, 20 pregnant women were entered in the study by available method.

A short version of the Adult Functional Health Literacy Questionnaire (S-TOFHLA) was used to measure the health literacy of pregnant women. The questionnaire consists of two parts: reading and computing which includes 36 items in reading comprehension and 4 items in computing. The reading comprehension section contains two actual health care texts (preparations for upper gastrointestinal imaging, patient rights and liability section on insurance forms) that have gaps in their sentences. For each gap in the text, there are 4 possible answers, only one of which is correct. This part of the questionnaire is completed by the individual himself. Then, for the computing section of the questionnaire, 4 cards containing explanations of some medications, an appointment, and an example of a blood glucose test result were given to the person and 4 items were asked. According to the questionnaire, scores between 0-53 indicate inadequate health literacy, scores between 54-66 indicate borderline health literacy and scores between 67- 100 indicate adequate health literacy. The reliability and validity of this questionnaire have been previously confirmed (24). Individuals entered the study with informed consent. Individuals' information as confidential and this study did not cost any participants.

After collecting the initial data, demographic characteristics were first presented by descriptive statistical methods including central indices, dispersion and frequency distribution in appropriate tables and charts. T-test, chi-square

and logistic regression tests were used to compare the quantitative variables at baseline between the two groups because of the normal distribution of quantitative variables. The significance level for all tests was considered less than 0.05. Statistical analysis was performed using SPSS software version 20.

Results

The purpose of this study was to compare the health literacy of 100 pregnant women referring to comprehensive urban health centers and 100 pregnant women referring to private gynecology and obstetrics offices in Mashhad. The comparison of demographic and midwifery characteristics of the women in the two groups are presented in Tables 1 and 2, respectively.

As we can see in Table 1, the two groups of pregnant women referring to the health center and the private office had a statistically significant difference in educational status and household income ($p < 0.05$) but there were no statistically significant differences between maternal age and employment status. According to the results of Table 2, two groups of pregnant women referring to health centers and private office had a significant difference in terms of childbearing ($p < 0.05$) but there was no significant difference in gestational age and pregnancy rating ($p > 0.05$).

Health literacy rank was also significantly different between the two groups of pregnant women referred to the health center and private office ($p < 0.05$) (Table 3). Based on the results of Table 4, all variables including age, education, employment status of mother and pregnancy rate, number of live births, her 3 months pregnancy and household income were significantly correlated with functional health literacy rating of pregnant women ($p < 0.05$).

Multivariate logistic regression was used to evaluate the effect of each of the variables on

functional health literacy in pregnant women. The dependent variable of functional health literacy was divided into two groups of low and moderate and high literacy. Reference class for variables of age (less than or equal to 25 years), education (elementary and secondary schooling), employment status (housewife), number of pregnancies (first time), number of live children (zero), trimester of pregnancy (last trimester) and household income variable (low income) was considered (Table 4). Among the variables of education, place of residence, household

income, gestational age, having a living child, occupation, pregnancy rating and maternal age in multivariate analysis, only the variables of occupation, household income, gestational age, and maternal age had significant effect on their health literacy. The higher household income (OR = 0.127 p = 0.013) and higher maternal age (OR = 0.27 p = 0.002) were in the second trimester of pregnancy (OR = 0.378 p = 0.018) and working mother (OR = 0.25 p = 0.004) was associated with a higher level of health literacy.

Table 1. Comparison of Demographic Characteristics of Pregnant Women in Two Groups of referring to Comprehensive Urban Health Centers and those in Private offices

Reference Place		Comprehensive Health Center Number (%)	Private Office Number (%)	Test statistics	The probability value
Maternal Age	Less than or equal to 25 years	34 (34)	25(25)	Pearson Chi-Square=0.163	p=0.163
	More than 25 years	66(66)	75(75)		
Total		100(100)	100(100)		
Employment status	Housewife	78(78)	66(66)	Pearson Chi-Square=3.571	p=0.059
	Employed	22(22)	34(34)		
Total		100(100)	100(100)		
Education	Elementary and secondary school	24 (24)	8 (8)	Pearson Chi-Square=9.524	p=0.002
	Higher	76 (76)	92 (92)		
Total		100(100)	100(100)		
Household Income	Low	31(31)	10(10)	Pearson Chi-Square=28.472	p=0.000
	Moderate	64(64)	60(60)		
	High	5(5)	30(30)		
Total		100(100)	100(100)		

Table 2. Comparison of midwifery characteristics of pregnant women in two groups referring to comprehensive urban health centers and those referring to private clinics

Reference Place		Comprehensive Health Center Number (%)	Private Office Number (%)	Test statistics	The probability value
gestational age	First three months	12(12)	6(6)	Pearson Chi-Square=2.244	p=0.326
	Second three months	37(37)	41(41)		
	Third three months	51(51)	53(53)		
Total		100(100)	100(100)		
Having Children	No Children	29(29)	43(43)	Pearson Chi-Square=4.253	p=0.039
	Having Children	71(71)	57(57)		
Total		100(100)	100(100)		
Pregnancy Rank	First Pregnancy	25(25)	35(35)	Pearson Chi-Square=2.381	p=0.123
	More than 1 Pregnancy	75(75)	65(65)		
Total		100(100)	100(100)		

Table 3. Comparison of health literacy ratings of women in two groups referring to comprehensive urban health centers and private offices

Reference Place		Comprehensive Health Center Number (%)	Private Office Number (%)	Test statistics	The probability value
Health Literacy	Inadequate	44(44)	28(28)	Pearson Chi-Square=6.664	p-value=0.036
	Borderline	40(40)	45(45)		
	Adequate	16(16)	27(27)		
Total		100(100)	100(100)		

Table 4. Assessment of the relationship between demographic and midwifery variables with functional health literacy in pregnant women

Women characteristics		functional health literacy			The probability value	statistic
		Low	Average	High		
Age	25 years =<	38(64.4%)	17(28.8%)	4 (6.8%)	<0.0001	30.882
	≥25years	34 (24.1%)	68 (48.2%)	39 (27.7%)		
Education	Elementary and Secondary	20 (62.5%)	10 (31.2%)	2(6.2%)	0.002	12.686
	Diploma and Higher	52 (31.0%)	75 (44.6%)	41 (24.4%)		
Occupation	Housewife	65 (45.1%)	58 (40.3%)	21 (14.6%)	<0.0001	23.972
	Employed	7 (12.5%)	27 (48.2%)	22 (39.3%)		
Pregnancy Rank	First Time	26 (43.3%)	16 (26.7%)	18 (30.0%)	0.01	9.217
	More than 1	46 (32.9%)	69 (49.3%)	25 (17.9%)		
Number of Living birth	Zero	31 (43.1%)	21(29.2%)	20 (27.8%)	0.016	8.324
	Equals or more than one	41(32.0%)	64 (50.0%)	23 (18.0%)		
Trimester of pregnancy	First	8 (44.4%)	8 (44.4%)	2 (11.1%)	<0.0001	24.465
	Second	14 (17.9%)	36 (46.2%)	28 (35.9%)		
	Third	50 (48.1%)	41 (39.4%)	13 (12.5%)		
Monthly household income	Low	30(41.7%)	10(11.8%)	1(2.3%)	<0.0001	46.906
	Average	39(54.2%)	60(70.6%)	25(58.1%)		
	High	3(4.2%)	15(17.6%)	17(39.5%)		

Discussion

Limited health literacy has been a common problem among the study participants as 36% of pregnant women had inadequate health literacy and 42.5% had borderline health literacy and only 21.5% had adequate health literacy. The results of five provinces showed adequate health literacy in only 28.1% of women under study (20). People with poor health literacy skills are said to be less aware of health and less likely to receive preventive services (16).

In line with the main purpose of the study, namely comparing the health literacy of women in two groups referring to comprehensive urban health centers and private clinics and examining the cause of its possible difference, the results showed that two groups of pregnant women referring to comprehensive urban health centers and private offices had a significant difference in health literacy and the mean score of health literacy was lower in women referring to comprehensive urban health centers. Also, there was a significant difference between the two groups of pregnant women referring to the comprehensive urban health center and private clinic, with 44% of pregnant women referring to inadequate literacy center while pregnant women referring to private practice, 28% of them had insufficient literacy rating. This difference appears to be due to differences in education and income levels between the two groups of pregnant women. 31 percent of those in the Comprehensive Health Center had low household incomes, compared with only 10 percent of those in private practice. On the other hand, 8% of those attending private office had less than a high school diploma and 24% of those attending comprehensive health centers had a statistically significant relationship with both of these variables.

In the present study, the results of multivariate

regression analysis showed that among the variables studied were Pregnant woman's referral (office - comprehensive urban health center), maternal age, monthly household income, gestational age, having a live child, maternal occupation and pregnancy rank, Only variables of maternal age, gestational age, mother's employment, and household income had a significant effect on the level of health literacy of pregnant women. Thus, lower maternal age, lower household income and having no job were associated with lower levels of health literacy and higher literacy rates in the second trimester of pregnancy.

In this study, a significant relationship was found between the level of health literacy and having a job. Consistent with the present study in the study of Tehrani et al. (2007), there was a significant relationship between raw scores of health literacy and occupation (20). A national study of health literacy in the US showed that people who are functionally illiterate are more likely to be poor, unemployed, or employed in seasonal jobs or with general economic fluctuations (26). The results of the Baghaei (et al., 2015) also showed that there is a significant relationship between mothers' job and their health literacy and mothers who have higher health literacy (21).

There was no significant relationship between education and health literacy in this study. Contrary to the results of the present study, there was a significant relationship between education and health literacy level in most studies. In this regard, the results of Ghanbari et al.'s study on pregnant women covered by the medical centers of Shahid Beheshti University of Medical Sciences showed that the years of education had the highest correlation with the level of health literacy (14). In their study, Lee et al. also found that mothers with a high level of

education had higher health literacy (27). The difference between the results of our study and other studies may be due to the fact that the majority of educated women were entered in this study and in our study there was a significant statistical relationship between occupation and health literacy. Another reason may be to consider reading and writing literacy as a condition of inclusion.

In this study, health literacy levels increased with age. Contrary to the results of the present study, a negative relationship between age and level of health literacy has been reported in most studies, with inadequate health literacy also increase with age. The findings of Ghanbari et al. (2011) showed a significant relationship between age and health literacy of individuals, especially with increasing age of over 30 years, inadequate health literacy increased significantly (14). Some have concluded that with age increasing, there are deficiencies in people's literacy as a result of decreased cognitive performance, distance from formal schooling and decreased emotional ability (28).

The results of our study showed that there is a significant relationship between monthly household income and health literacy. Thus, high household income has been associated with higher levels of health among pregnant mothers. The results of the Ghanbari et al study also show that with increasing household monthly income, inadequate and borderline health literacy in the studied population decreases and adequate health literacy increases (14). The lower level of health literacy in women with lower incomes may be due to the lower level of education in these groups. Tehrani et al. (2007) have shown that as economic levels increase, raw health literacy levels increase and this trend has existed even after eliminating the confounding effect of other variables in the modified model, although its

intensity has decreased (20). Baqaei et al. also showed that as household income increased, maternal health literacy increased (22). Studies in the United States have also shown a relationship between inadequate income and poor health literacy in pregnant women (11, 26).

Conclusion

Health literacy is very important in understanding the risk of prenatal mothers. Mothers' perceptions of risk may affect their desire to follow pregnancy advice. Considering the impact of maternal health literacy level on child and family health and according to the results of the present study, age, mother's employment, and household income play an important role in promoting health literacy. Therefore, it is necessary to consider macroeconomic and socioeconomic planning and policy-making so that we can promote maternal health literacy across all classes of society. One of the limitations of this study is non-random sampling. It was also the site of a plan limited to urban areas that should be used with caution when generalizing the results.

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