

Measuring Maternal Health Literacy in Pregnant Women Referred to the Healthcare Centers of Mashhad, Iran, in 2015

Elham Charoghchian Khorasani (MSc)^{1,4}, Nooshin Peyman (PhD)^{2,4*}, Habibollah Esmaily (PhD)^{3,4}

¹ PhD Student in Health Education and Promotion, Student Research Committee, Mashhad University of Medical Sciences, Mashhad, Iran

² Associate Professor, Department of Health Education and Health Promotion, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran

³ Professor, Department of Biostatistics and Epidemiology, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran

⁴ Social Determinants of Health Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

ARTICLE INFO	ABSTRACT
<i>Article type:</i> Original article	Background & aim: Maternal health literacy is defined as the cognitive and social skills determining the ability to get access to, understand, and use information to promote mothers' health and that of their children. This study aimed to investigate maternal health literacy in pregnant women referred to the healthcare centers of Mashhad, Iran.
<i>Article History:</i> Received: 06-Nov -2016 Accepted: 21-Jun -2017	Methods: This cross-sectional study was conducted on 185 randomly selected pregnant women referred to the healthcare centers of Mashhad, Iran, in 2015. Data were collected using demographic and maternal health literacy questionnaire. Data analysis was performed using one-way analysis of variance (ANOVA), independent t-test, and Pearson's correlation coefficient test in SPSS, version 16.0.
<i>Key words:</i> Health literacy Pregnant women Healthcare centers	Results: The mean score of maternal health literacy was 42.7±5.6 (out of 56). There was a significant relationship between maternal health literacy score and women's educational level (P<0.001), their spouses' educational level (P<0.001), and family income (P=0.008). Conclusion: The mean score of maternal health literacy is not desirable in Iran. Regarding the significant relationship between the score of maternal health literacy and women's and their spouses' educational level and family income, it is essential to promote maternal health literacy, especially in low-income and lower-educated population.

► Please cite this paper as:

Charoghchian Khorasani E, Peyman N, Esmaily H. Measuring Maternal Health Literacy in Pregnant Women Referred to the Healthcare Centers of Mashhad, Iran, in 2015. Journal of Midwifery and Reproductive Health. 2018; 6(1): 1157-1162. DOI: 10.22038/JMRH.2017.9613

Introduction

Health literacy is an emerging concept and a major health issue (1). Recently, The World Health Organization had introduced health literacy as one of the most important determinants of health (2). Health literacy is a global challenge for the 21st century and refers to individuals' capacity to obtain, interpret, and understand basic health information and services for making appropriate decisions (3, 4).

Health literacy involves gaining information and personal skills, as well as carrying out activities to promote personal and social health status by modifying lifestyle (5). The concept of health literacy is not restricted to the transfer of

information, but rather focuses on developing individuals' skills and self-esteem to improve their health and empower them to track, validate, and use information for controlling health determinants (6).

According to the literature, low level of health literacy has a negative effect on health knowledge, preventive behaviors, ability to move toward healthcare system, using preventive services, and the ability of women to look after their children (7-9). Nearly 90 million people in the United States have limited health literacy leading to increased hospitalization and the use of emergency services, which imposes a

* Corresponding author: Nooshin Peyman, Associate Professor, Department of Health Education and Health Promotion, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran.. Email: Peymann@mums.ac.ir

heavy economic burden (\$69 billion a year) on the healthcare system (10).

In Iran, according to a study in five provinces, 28.1%, 15.3%, and 56.6% of participants had adequate, borderline, and inadequate levels of health literacy, respectively (11). Maternal health literacy is defined as the cognitive and social skills determining the ability to get access to, understand, and use information to promote their health and that of their children (12).

In a study conducted on pregnant women referred to healthcare centers of Tehran, Iran, 30% and 23.6% of women had inadequate and borderline levels of health literacy, respectively (13). Given the results of a study performed on women referred to healthcare centers of Siberia, Russia, 44% of women had low levels of health literacy (14). Maternal health literacy is defined as special knowledge and social skills for detecting risk factors, healthy lifestyles, and proper nutrition during pregnancy, which affects pregnancy outcome by improving the quality of antenatal care (15).

Maternal health literacy is important because antenatal care is the first exposure of many women to the healthcare system. Moreover, the first experience with this complex system, even with adequate health literacy level, can be scary. Additionally, women with low levels of health literacy encounter more trouble with learning new information and following guidance.

In addition, a woman's health status and her level of health knowledge during pre-pregnancy, pregnancy, and postnatal phases directly affect her progeny. Because educating females is essential to promote their family's health status, women have been identified as initial population for increasing emphasis on the health literacy (13). Antenatal education, which focuses on pregnancy, delivery, and postpartum care, can improve the maternal health literacy (16). This study aimed to assess the maternal health literacy in mothers referred to comprehensive healthcare centers to improve their health literacy level.

Materials and Methods

This cross-sectional study was conducted on 185 pregnant women referred to comprehensive healthcare centers of Mashhad, Iran. The sample size was computed as 123 cases based on a

similar study with mean and standard deviation of 130.17 ± 8.46 and 95% confidence interval (accuracy of 1.5) by using a formula for estimating the mean of a quantitative variable in the society (17). Given the fact that the accuracy increases along with the sample size, this study was conducted on 185 subjects.

The subjects were selected from No. 1, 2, 3, 5, and Samen comprehensive healthcare centers of Mashhad, Iran, through multistage cluster random sampling method. Four health centers were randomly selected from each cluster (a total of 16 comprehensive healthcare centers). Finally, the eligible women were selected and asked to come to the centers at specified time by a phone call.

The inclusion criteria entailed Iranian nationality, being literate and nulliparous, as well as willing to participate in the study. Those who were willing to attend the study were referred to the comprehensive healthcare center or, as requested by the subjects, the researcher went to their home. The researcher firstly explained the aim of the study and the research process to them. Then, after obtaining an informed consent, they completed the questionnaires.

Data were collected using a two-part questionnaire, the first part of which was demographic data form and the second part was maternal health literacy questionnaire. The demographic data from included the participants' and their spouses' educational level, the subjects' occupation, and their family income. The maternal health literacy questionnaire is developed by Mojinyinola and its validity and reliability were determined in Iran (16).

The validity and reliability of the questionnaire were assessed by Cronbach's alpha coefficient and were reported to be 0.96 and 0.89, respectively (18). This questionnaire contained 14 questions; each question was scored from 1 to 4 (strongly disagree, disagree, agree, and strongly agree, respectively). The total score (ranging from 14 to 56) demonstrated the level of health literacy.

The questionnaire was presented to the subjects and they were assured of the confidentiality of their personal information. Moreover, they were informed that they could leave the study at any stage. Data analysis was performed using one-way analysis of variance (ANOVA), independent t-test, Pearson

correlation coefficient, and descriptive statistics in SPSS software, version 16.0. In all the measurements, P-value less than 0.05 was considered statistically significant.

Results

The mean age of the participants was

24.9±5.0 years (ranging from 16 to 41 years), and the mean score of maternal health literacy was 42.7±5.6 (ranging from 29.0 to 55.0). According to the results of Pearson correlation coefficient test, no significant linear correlation was found between the maternal health literacy score and the mothers' age ($r=0.027$, $P=0.72$).

Table 1. The frequency distribution of the subjects' demographic characteristics and their relationship with the level of maternal health literacy

Variable	N (%)	Maternal health literacy Mean±SD	Test result
Educational level			
Less than diploma	68 (36.8)	04.9±5.3	P* < 0.001
Diploma	67 (36.2)	42.8±5.0	
Above diploma	50 (27.0)	45.0±5.8	
Spouse's educational level			
Less than diploma	86 (46.5)	14.4±5.3	P* < 0.001
Diploma	57 (30.8)	24.5±5.5	
Above diploma	42 (22.7)	54.5±5.3	
Occupation			
Housewife	165 (89.2)	24.5±5.4	P** = 0.132
Employee	20 (10.8)	44.5±6.6	
Spouse's occupation			
Employee	26 (14.1)	44.7±6.5	P* = 0.151
Worker	48 (25.9)	14.8±5.5	
Self-employment	104 (56.2)	24.4±5.3	
Others	7 (3.8)	44.2±3.8	
Family income (million toman)			
<0.5	53 (28.6)	24.1±5.4	P* = 0.008
0.5-1	94 (50.8)	14.9±5.1	
1-1.5	26 (14.1)	54.5±5.6	
1.5-2	12 (6.5)	54.4±6.9	

*One-way analysis of variance, **Independent t-test

There was no significant correlation between the mean score of health literacy and the mothers' and their spouses' occupations ($P=0.132$, $P=0.151$, respectively). However, there was a significant correlation between health literacy level and the mothers' and their spouses' educational levels ($P<0.001$) and family income ($P=0.008$). Based on the findings presented on Table 1, the results of one-way ANOVA showed a significant correlation between the mean score of health literacy and the mothers' and their spouses' educational levels and family income.

Tukey's test was applied to evaluate the difference between the mean score of maternal health literacy and educational level. According to the results, there was significant difference between the maternal health literacy and educational levels in women with the educational level of diploma and above. Moreover, a

significant difference was observed between the spouses' educational level and the mean score of health literacy, only between the less than diploma and diploma, as well as diploma and above diploma. Additionally, Tukey's test in examining the difference between the mean of maternal health literacy and family income showed that only the group with the income of 500,000-1,000,000 toman was related to that with 1,000,000-1,500,000 toman income, and the rest were not related.

Discussion

In this study, the mean score of health literacy was 42.7±5.6, with a minimum health literacy of 29 and a maximum of 55. Consistent with our results, Kharrazi et al. in 2016 conducted a study on 120 women who had recently given birth. In the mentioned study, the mean age of the participants was 27.2±5.62

years and the mean score of maternal health literacy was 42.4 ± 7.5 using the Maternal Health Literacy and Pregnancy Outcome Questionnaire (19). However, the present study was conducted on nulliparous pregnant women.

In our study, there was a significant correlation between the level of maternal health literacy and family income, which was in line with the results obtained by Kharrazi, Raisei, Ghanbari, and Tavasoli (2, 13, 19, 20). Nevertheless, this result was inconsistent with the results of the study conducted by Sharifirad, which might be due to different study population and questionnaires (21). According to the results of the current study, the level of health literacy increased along with the educational level, which was in congruence with the results of the studies carried out by Kharrazi, Khosravi, and Sharifirad (19, 21, 22).

Considering the working hours of the comprehensive healthcare centers and low number of staff and students for performing antenatal care and referring the mothers to nongovernmental centers, offices, and hospitals, the majority of studies reported that the level of health literacy among Iranian population is low (13, 15). This might be due to the fact that low-income and lower-educated people refer to comprehensive healthcare centers. On the other hand, if we conduct a study on nongovernmental clinics and hospitals, which people with higher educational and income levels refer to them, higher health literacy levels might be reported.

Given the results of the study performed by Poorman et al., inadequate health literacy was associated with inadequate vitamin intake during pregnancy and never breastfeeding (23). In addition, Charoghchian et al. found a significant and direct correlation between the maternal health literacy and breastfeeding self-efficacy (24). In the present study, no significant relationship was observed between the maternal health literacy and age, which was consistent with the studies of Kharrazi, Javadzadeh, and Behzad (25, 26, 19); nonetheless, this result was inconsistent with the results obtained by Khosravi and Mahmudi (22, 27). This inconsistency might be due to different study population and questionnaires.

Regarding the results of the study carried out by Kohan et al., there was a significant

difference between the women with adequate health literacy and those with low levels in terms of antenatal care, birth weight, maternal hematocrit level, iron and folic acid supplementation, pregnancy weight gain, gestational age at birth, delivery method, and the time to start breastfeeding (28). Mojinyinola recommended to healthcare providers and pregnant and breastfeeding women to attend training courses to improve their health literacy and understand pregnancy red flags (19).

Given the results of a study conducted by Kaufman et al., a significant relationship was found between the level of functional health literacy and breastfeeding and concluded that many diseases could be prevented by simple education (29). In Parker et al. opinion, the physicians should modify their communication with respect to the level of patients' health literacy. Several simple techniques for improving health literacy are using simple language and low speed, as well as the participation of family members in discussions. The National Labor and Nursing Committee in the United States suggested that post the health issues at grade 5 level, which is still hard for 25% of global population (11).

There are multiple tools for changing the health literacy program in practice including improving speaking, writing, and self-management skills, as well as empowering supportive systems (4). Therefore, it is essential to implement several programs to promote these factors to enhance maternal health literacy, which has a close relationship with the promotion of community health (25).

This study assessed the maternal health literacy in nulliparous women for the first time in Iran. This study was conducted in comprehensive healthcare centers that limited the possibility of the participation of women who were student or employee.

Conclusion

Regarding the importance of maternal health literacy in improving community health status and significant relationship between maternal health literacy and family's educational and income levels, enhancing the level of maternal health literacy, especially in low-income and lower-educated people is of paramount importance. In this regard, it is essential to

perform educational interventions to improve maternal health literacy as one of the health priorities of the community. Additionally, further studies are recommended to evaluate the level of health literacy in women referred to nongovernmental hospitals and clinics.

Acknowledgements

This article was a part of a Master's thesis in Faculty of Health, Mashhad University of Medical Sciences (No. 931625), Mashhad, Iran. Therefore, the authors appreciate the Deputy of Research of the University and the staff of the healthcare centers and all the participants for their cooperation.

Conflicts of interest

The authors declare no conflicts of interest.

References

- Gillis DE. Exploring dimensions of health literacy: a case study of interventions to promote and support breastfeeding. [PhD Dissertation]. Nottingham, England: University of Nottingham; 2009.
- Reisi M, Javadzade SH, Mostafavi F, Sharifirad G, Radjati F, Hasanzade A. Relationship between health literacy, health status, and healthy behaviors among older adults in Isfahan, Iran. *Journal of Education and Health Promotion*. 2012; 1(1):31.
- Nutbeam D, Kickbusch I. Advancing health literacy: a global challenge for the 21st century. *Health Promotion International*. 2000; 15(3):183-184.
- Julie M, Cooper BS, Marguerite R. Health literacy in practice program, evaluation report. Western Michigan University. School of Social Work: Educare of Southwest Michigan. 2011; 2011:1-156.
- World Health Organization. Division of health promotion, education and communications health education and health promotion Unit. *Health promotion glossary*. Geneva: World Health Organization; 1998. P. 10.
- Renkert S, Nutbeam D. Opportunities to improve maternal health literacy through antenatal education: an exploratory study. *Health Promotion International*. 2001; 16(4):381-388.
- Baker DW, Wolf MS, Feinglass J, Thompson JA, Gazmararian JA, Huang J. Health literacy and mortality among elderly persons. *Archives of Internal Medicine*. 2007; 167(14):1503-1509.
- Shieh C, Halstead JA. Understanding the impact of health literacy on women's health. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*. 2009; 38(5):601-612.
- Chen AM, Yehle KS, Plake KS, Murawski MM, Mason HL. Health literacy and self-care of patients with heart failure. *The Journal of Cardiovascular Nursing*. 2011; 26(6):446.
- Tol A, Pourreza A, Rahimi Foroshani A, Tavassoli E. Assessing the effect of educational program based on small group on promoting knowledge and health literacy among women with type2 diabetes referring to selected hospitals affiliated to Tehran University of Medical Sciences. *Razi Journal of Medical Sciences*. 2013; 19(104):10-19 (Persian).
- Tehrani Banihashemi SA, Amirkhani MA, Haghdoost AA, Alavian SM, Asgharifard H, Baradaran H, et al. Health Literacy and the influencing factors: a study in five provinces of Iran. *Strides in Development of Medical Education*. 2007; 4(1):1-9 (Persian).
- Mobley SC, Thomas SD, Sutherland DE, Hudgins J, Ange BL, Johnson MH. Maternal health literacy progression among rural perinatal women. *Maternal and Child Health Journal*. 2014; 18(8):1881-1892.
- Ghanbari S, Majlessi F, Ghaffari M, Mahmoodi Majdabadi M. Evaluation of health literacy of pregnant women in urban health centers of Shahid Beheshti Medical University. *Daneshvar*. 2012; 19(97):1-12 (Persian).
- Javadzade H, Sharifirad G, Reisi M, Tavassoli E, Rajati F. Health literacy among adults of Isfahan, Iran. *Journal of Health System Research*. 2013; 9(5):540-549 (Persian).
- Amiresmaili M, Nekoei MM, Saberi Anari S, Sadeghi A, Saber M, Taheri G, et al. Study of health literacy level of women referring to health centers-2010. *Journal of North Khorasan University of Medical Sciences*. 2013; 5(5):1071-8 (Persian).
- Mojoyinola JK. Influence of maternal health literacy on healthy pregnancy and pregnancy outcomes of women attending public hospitals in Ibadan, Oyo state, Nigeria. *African Research Review*. 2011; 5(3):28-39.
- Mirmohamad AM, Bahiraii A, Rahimi A, Hashemzadeh M, Sohrabi Z. Effect of educational package on breastfeeding self-efficacy in postpartum period. *Payesh*. 2014; 13(2):221-228 (Persian).
- Kharazi SS, Peyman N, Esmaily H. An evaluation of the validity and reliability of the maternal health literacy and pregnancy outcome questionnaire. *Journal of Health System Research*. 2016; 12(4):512-519 (Persian).
- Kharazi S, Peyman N, Esmaily H. Association between maternal health literacy level with pregnancy care and its outcomes. *The Iranian Journal of Obstetrics, Gynecology and Infertility*. 2016; 19(37):40-50 (Persian).
- Reisi M, Mostafavi F, Javadzade H, Mahaki B, Tavassoli E, Sharifirad G. Communicative and critical health literacy and self care behaviors in

- patients with type2diabetes. Iranian Journal of Diabetes and Metabolism. 2016; 14(3):199-208 (Persian).
21. Reisi M, Mostafavi F, Javadzade S, Mahaki B, Sharifirad G. Assessment of some predicting factors of self-efficacy in patients with type 2 diabetes. Iranian Journal of Endocrinology and Metabolism. 2015; 17(1):44-52 (Persian).
 22. Khosravi A, Ahmadzadeh K, Arastoopoor S, Tahmasbi R. Health literacy levels of diabetic patients referred to Shiraz health centers and its effective factors. Health Information Management. 2015; 12(2):194-205 (Persian).
 23. Poorman E, Gazmararian J, Elon L, Parker R. Is health literacy related to health behaviors and cell phone usage patterns among the text4baby target population? Archives of Public Health. 2014; 72(1):13.
 24. Charoghchian Khorasani E , Peyman N, Esmaily H. Relations between breastfeeding self-efficacy and maternal health literacy among pregnant women. Evidence Based Care. 2017; 6(4):18-25.
 25. Reisi M, Javadzade H, Mostafavi F, Tavassoli E, Sharifirad G. Health literacy and health promoting behaviors among older adults. Journal Health System Research. 2013; 9(8):827-836 (Persian).
 26. Peyman N, Behzad F, Taghipour A, Esmaily H. Promoting level of health literacy & self efficacy of chronic patients referred to health centersthrough educating health literacy for the staffs of health centers in Mashhad-2013. Mashhad: Mashhad University of Medical Sciences School of Health; 2013 (Persian).
 27. Mahmoodi H, Negarandeh R, Javaheri M, Sharifi P, Ghanei R, Aminpour A, et al. Examining the relation of health literacy with outcomes of diabetes among type 2 patients in Saqez, 2011. Journal of Urmia Nursing and Midwifery Faculty. 2014; 12(1):56-62 (Persian).
 28. Kohan S, Ghasemi S, Dodange M. Associations between maternal health literacy and pregnancy outcomes. Iranian Journal of Nursing and Midwifery Research. 2006; 3(32):33-42 (Persian).
 29. Kaufman H, Skipper B, Small L, Terry T, McGrew M. Effect of literacy on breast-feeding outcomes. Southern Medical Journal. 2001; 94(3):293-296.