THE JOURNAL OF TELEMEDICINE

Jafarian et al, Health Literacy and Preferred Sources of Health Information, Summer 2024 1(3), 24-32

ORIGINAL ARTICLE

Health literacy and preferred sources of health information among mothers attending comprehensive health service centers in Semnan County

Nastaran Jafarian, Saeed Kassaeian, Ali Fakhr-Movahedi, Seifollah Alaei*, and Majid Mirmohammadkhani

Received 13/08/2024
Accepted for publication 18/08/2024
Published 16/09/2024

* ***Correspondence to****: 5 Kilometers of Damghan Road, Educational and Research Campus, School of Nursing and Midwifery, Semnan University of Medical Sciences, Postal Code: 3513138111, Semnan, Iran Email:* alaei@semums.ac.ir

About the authors:

Nastaran Jafarian; MSc student in pediatric Nursing, Student Research Committee, Semnan University of Medical Sciences, Semnan, Iran.

Saeed Kassaeian; PhD in Community Medicine, Assistant Professor, Department of Community Medicine, School of Medicine, Social Determinants of Health Research Center, Semnan University of Medical Sciences Semnan, Iran.

Ali Fakhr-Movahedi; PhD in Nursing, Professor, Nursing Care Research Center, Semnan University of Medical Sciences, Semnan, Iran, and Department of Pediatric Nursing, School of nursing and Midwifery, Semnan University of Medical Sciences Semnan, Iran.

Seifollah Alaei; PhD in Nursing, Assistant Professor, Nursing Care Research Center, Semnan University of Medical Sciences, Semnan, Iran, and Department of Operating Room, School of Allied Medical Sciences, Semnan University of Medical Sciences, Semnan, Iran.

Majid Mirmohammadkhani; PhD in Epidemiology, Professor, Social Determinants of Health Research Center, Department of Community Medicine, School of Medicine, Semnan University of Medical Sciences, Semnan, Iran.

ABSTRACT

This descriptive-analytical study aimed to assess the health literacy status among mothers and their preferred sources of health information in 2023. Study carried out on 330 mothers attending comprehensive health service centers (CHC) in Semnan County to monitor the health of their two-year-old children. Data collection tools included demographic information, the Iranian Adults Health Literacy (HELIA) questionnaire, and a checklist regarding health information sources. The data were organized and analyzed using SPSS25 with appropriate statistical tests. The mean age of the mothers was 32.5 ± 5.5 years. Approximately 43% held a Bachelor's degree, 69% were housewives, and 31% were employed. The overall average health literacy score was 68.39%, with the highest score in the access sub-domain (75.36%) and the lowest in the evaluation sub-domain (38.69%). Healthcare providers (44.2%) and the internet and social media (32.7%) were the most utilized sources for obtaining health information. The health literacy status of mothers was relatively favorable. Mothers' reliance on healthcare providers to receive appropriate health information is logical and meanwhile internet and social media plays critical role in health information and can be account as e learning source. However, it needs to enhance access and use of accurate and reliable information.

Keywords: Comprehensive Health Service Centers, Health Literacy, Health Information Sources, Distance Education

INTRODUCTION

Although life expectancy and survival rates have significantly improved over recent decades, various health-threatening factors persist (1). Maternal and child care are essential for maintaining and improving health, often facilitated through participatory and family-centered approaches in comprehensive health centers (CHCs) (2). These approaches range from outreach educational activities to communities acting as full partners in decision-making (3). A mother's knowledge and actions significantly influence maternal and child health (4). According to a qualitative study on antenatal care experiences, health literacy is critical to maternal self-care (5). Families can effectively maintain and improve children's health if they possess adequate knowledge and awareness and receive sufficient support (6).

Health literacy is a global issue that is critical in enhancing healthcare quality and access for all individuals (7). The WHO considers it one of the most critical determinants of health, enabling people to access, understand, appraise, and use information and services to promote and maintain their health and well-being (8). Health literacy encompasses cognitive and social skills and individuals' ability to comprehend and utilize available information for health promotion and maintenance (9). The term "health literacy" refers to a community's ability to access, interpret, and understand health information and services to make informed health decisions, describing the capability to engage with health information and services (10). Health literacy involves skills, including reading, listening, analyzing, decision-making, and utilizing information, and is not solely dependent on an individual's education level (3). The primary

goal of enhancing health literacy is to improve the quality of healthcare (11). Information literacy skills can help improve individuals' health literacy (12).

Properly using valid and appropriate information, especially in health matters, is crucial. Information, as a fundamental element, influences decisions in various fields, including health and healthcare. Enhancing health literacy requires acquiring diverse skills within the framework of information literacy (7). Besides access to health information resources, the quality and accuracy of information and its conversion into usable knowledge should be emphasized (13). According to a study, quantitative indicators alone are insufficient for assessing the quality of health-related web pages (14).

A critical issue regarding health literacy is identifying which sources individuals prefer to use to obtain health information. This study aims to determine the health literacy level of mothers with two-year-old children in Semnan County and explore how they meet their health information needs.

METHODS

This cross-sectional study was conducted on 330 mothers with children aged two years (born in 2021) residing in Semnan County. Given that the annual number of births in Semnan City is approximately 2,000, a sample size of 322 was initially calculated using the Morgan table, which was then increased to 330 to enhance the study's power. Cluster sampling was employed to select six CHCs in Semnan, ensuring coverage of all regions of the urban population, including the north, south, and central areas.

The research tools used in this study included demographic questionnaires, the Health Literacy of Iranian Adults (HELIA) self-report questionnaire, and a checklist of preferred sources for obtaining health information. The demographic and family structure information collected included the number of family members, age, gender, marital status, occupation, and living place status (rented or owned). The Health Literacy Questionnaire comprises 33 items distributed across five domains: (1) Access to health information (items 1–6), (2) Reading skills for health information (items 7–10), (3) Understanding health information (items 11–17), (4) Ability to evaluate health information (items 18–21), and (5) Decision-making and application of health information (items 22–33). Each item is scored from 1 to 5 on a Likert scale (Never, Rarely, Sometimes, Often, Always). The raw score for each participant is obtained by summing the item scores. These raw scores are converted to a scale of 0–100, categorizing health literacy levels as Inadequate (0–50), less than Adequate (50–66), Adequate (66–84), and Excellent (84–100). The validity of this tool was assessed by Montazeri et al. through qualitative content analysis and exploratory factor analysis, while its reliability was evaluated by calculating the internal consistency coefficient. The Cronbach's alpha coefficient for the constructs ranged from 0.72 to 0.89 (15).

Inclusion criteria for the study were the ability to read and write, proficiency in Persian, willingness to participate, and having suitable physical and mental conditions to complete the questionnaire. Exclusion criteria included employment and education in the health field and maternal exposure to chronic diseases during pregnancy (such as gestational diabetes). In coordination with the Vice-Chancellor of Health of Semnan University of Medical Sciences and the relevant managers, the researcher or a colleague attended the CHC consecutively from Saturday to Wednesday during the morning shift for sampling and data collection. During this time, mothers brought their children for health monitoring. After providing preliminary

explanations about the study objectives and methods and obtaining informed consent, the questionnaires related to this study, including demographic information and the HELIA self-reporting questionnaire, were distributed to the mothers for completion. The research participants also completed a checklist of preferred sources for gaining health literacy. The collected data were organized and analyzed using appropriate statistical tests at a significance level of 5% (α=0.05) with SPSS version 25.

The Ethics Committee of Semnan University of Medical Sciences, Iran approved the study (IR.SEMUMS.REC.1402.157).

RESULTS

The average age of the mothers in the study was 32.5 ± 5.5 years, while the fathers' average age was 37.6 ± 5.6 years. The children had an average age of 2.5 ± 0.2 years, and the mothers' age at pregnancy was 30.5 ± 5.2 years. The average number of family members was 3.7 ± 0.7. Of the 330 children, 158 (47.9%) were girls, and 172 (52.1%) were boys. Approximately 43% of the mothers held a bachelor's degree, and 69% were housewives. Among the families studied, 62.4% owned their homes, and 63% reported an average income. Additionally, 49.7% of the mothers visited CHCs for monitoring their first child (Table 1).

TABLE I. DISTRIBUTION OF DEMOGRAPHIC VARIABLES OF RESEARCH UNITS

AGE MEAN±SD	**Mothers 32.65±0.28**		**Fathers 37.27±5.58**	**Children 2.51±0.2**
Mothers Education	Under Diploma	Diploma	Bachelor	**MASTERS**
	40(%15.2)	95(%28.8)	142(%43)	**43(%13)**
Occupation	housewife	Worker	Employee	**Other(Free)**
Mothers	228(%69.1)	0	84(%25.5)	**18(%5.5)**
Fathers	0	62(%18.8)	112(%33.9)	**156(%47.3)**
Housing situation	Owner		Rental	-
	206(%62.4)		124(%37.6)	
Family's income	Good	Average	**Low**	
	66(%20)	208(%63)	**56(%17)**	
Birth rank of the child	First	Second	**Third And More**	
	164(%49.7)	120(%36.4)	**46(%13.6)**	

The overall health literacy score of the mothers was 68.39%, with the highest score in the access sub-domain (75.36%) and the lowest in the evaluation sub-domain (38.69%) (Table 2).

TABLE II. FREQUENCY DISTRIBUTION OF MOTHERS' HEALTH LITERACY LEVELS AND DOMAINS

	Insufficient	Not quite enough	Sufficient	Excellent	Total percent
Total Health Literacy	28(%8.5)	122(%37)	139(%42.1)	41(%12.4)	%68.39
Reading	143(%43.3)	60(%18.6)	88(%26.8)	39(%11.8)	%57.46
Accesses	46(%13.9)	65(%19.7)	96(%29.1)	123(%37.3)	%75.36
Understanding	33(%10)	75(%22.7)	120(%36.4)	102(%30.9)	%73.30
Evaluation	289(%87.6)	40(%12.1)	0	1(%0.3)	%38.69
Decision Making	60(%18.6)	101(%30.6)	130(%39.4)	39(%11.8)	%66.50

A significant relationship was found between maternal health literacy level and the mother's age, education level, occupation, as well as the father's occupation ($P < 0.05$). However, no significant relationship was observed between the father's age and the level of maternal health literacy ($P > 0.05$) (Table 3).

TABLE III. RELATIONSHIP BETWEEN DEMOGRAPHIC VARIABLES AND HEALTH LITERACY LEVEL

Variables	Correlation Coefficients	p value
Mother's Age	0.148	0.007
Father's Age	0.019	0.733
Mother's Education level	0.583	0.000
Father's occupation	0.297	0.000
Mother's occupation	0.-355	0.000

Pearson &Spearman Test

The data indicated that the most common sources of information for mothers were healthcare providers, followed by the Internet and social media. The least common sources were public media, such as radio and television (Table 4).

TABLE IV. PREFERRED SOURCES OF OBTAINING HEALTH INFORMATION FOR MOTHERS

health information Source	Number	Percent
Health care providers	146	44.2
Internet and social media	108	32.7
Relatives and friends	60	18.2
Books and Journals	10	3
Public Media	6	1.8
Total	**330**	**100**

DISCUSSION

This study assessed the health literacy levels and preferred sources of health information among 330 mothers attending CHCs to monitor their children's health. The findings indicated that the average health literacy score was 68.39%, which is relatively good. In a similar study, the health literacy score of mothers with hospitalized newborns was 71.5 out of 100, demonstrating a more appropriate level (16). Similarly, in a study by Morteza Nezhad et al. (2019), the average health literacy score of mothers with newborns was 73.72 % (17). These results are comparable to the current study. However, in contrast, Kharrazi et al. (2016) reported an average health literacy score of 42.47 ± 7.54 among pregnant mothers (18). The study by Santel et al. (2020) also found that over 39% of participating mothers had low health literacy levels (19).

It should be noted that differences in findings between studies, including the current one, may be related to tools and methods used, as well as the selection of research samples from low-income and rural areas. Considering the significant role of women in family and child health, the relatively favorable level of health literacy among Iranian women can be seen as a promising factor in maintaining and improving health.

In terms of health literacy sub-domains, the scores were as follows: access (75.36%), understanding (73.3%), decision-making (66.5%), reading (57.46%), and evaluation (38.69%). In a study by Ebrahimipour, the reported scores were understanding (83.7%), decision-making (76.3%), reading (72.2%), evaluation (63.1%), and access (62.1%) (16). The expansion of the internet and social media in recent years has increased general access to health information sources (20). Despite improved network infrastructure and access to data, mothers in the current study faced challenges in evaluating health information. Health authorities should prioritize access to accurate and scientific information (13).

A study in Laos showed a significant relationship between education level, family income, number of children, and mothers' health literacy levels (21). In the current study, most mothers had a diploma or higher education, 31% were employed, and 83% of families had an

average or good income. A significant relationship was found between the education level and employment status of mothers and their health literacy. In line with these findings, Ebrahimipour et al. reported that 58.2% of mothers had at least a diploma, and there was a significant relationship between education level and health literacy (16). Morteza Nezhad and colleagues also found a positive relationship between health literacy and the employment status of mothers (17). However, a study by Nodoushan et al. on postpartum women found no relationship between age, income, place of living, and health literacy, except for a significant relationship with education level (22). The study by Brandstetter et al. (2020) showed that primiparous mothers and those with lower education levels had lower health literacy (23).

In the study by Sahraei et al., a significant relationship was reported between health literacy and factors such as age, gender, marital status, education, BMI, physical activity, and tobacco use (24). According to a cohort study by Teresa et al. in Germany, 38.8% of mothers had insufficient health literacy, and 75.9% of breastfeeding mothers breastfed for at least four months. However, no significant relationship was found between maternal health literacy and the duration of exclusive breastfeeding (25). These studies highlight the consequences of health literacy, although many, like the current study, solely evaluate health literacy levels. However, these findings suggest that younger individuals with higher education and socioeconomic status, tend to have higher health literacy, potentially leading to better health behaviors.

The current study found that healthcare providers (44.2%) and the internet and social media (32.7%) were the most used sources of health information. In Ebrahimipour's study on adults in Karaj, doctors (81%) and public media (56%) were the most crucial information sources (16). This findings about health litracy of hospitalized children's mothers, may be influenced by there's access to doctors, and family-based education approaches in hospitals. In Sahraei's study, public media and healthcare providers were the primary sources (24). Additionally, the widespread use of mobile phones and easy internet access has contributed to this situation. One study showed that family knowledge and attitude affect the use of maternal and child health resources and handbooks (26). In fact, expanding the use of mobile phones and access to the Internet can be considered as one of the important sources of E learning. Strategies to improve health literacy, including health education programs, and the use of information technology (7), including E health and mobile health and even virtual health monitoring (27), should be on the agenda to maternal child's health care.

Study Limitations:

Limitations of the current study included not evaluating health attitudes and behaviors and relying on self-reported health literacy.

CONCLUSION

The findings of this study indicate that the health literacy of mothers is at a relatively good level. Among the sub-domains, access to health information resources was the most favorable, while evaluation skills were the least developed and should be a focus for improvement. In terms of health information sources, beside healthcare providers, mothers relied to Internet and social media as E learning sources. Therefore, directing mothers toward reliable information and encouraging and expanding infrastructure to virtual communication with healthcare providers and healthcare organizations can contribute to improving the community's health literacy level progressively and effectively.

ACKNOWLEDGMENTS

This study is part of a master's thesis in emergency nursing at Semnan University of Medical Sciences. We express our gratitude to the Vice President for Research, the Ethics Committee of Semnan University of Medical Sciences, and the Faculty of Nursing and Midwifery for their support. We also thank the mothers who participated in this study and the managers of comprehensive health service centers for their support in conducting the study.

CONTRIBUTORSHIP STATEMENT

N.J. conceived of the idea and collected data. S.K. and A.FM. developed and designed the study. S.A. conceived of the idea and supervision of project. All authors reviewed and commented on the manuscript, as well as all are responsible for the content of the manuscript.

FUNDING STATEMENT

This research did not receive any specific grant from any funding agency in the public, commercial, or not-for-profit sectors. In addition, this study was funded by Semnan University of Medical Sciences (Grant No. 3720).

DECLARATION OF CONFLICTING INTERESTS

The authors declared no conflicts of interest regarding the research, authorship, and publication of this article.

DATA AVAILABILITY STATEMENTS

The data will be made available from the corresponding author on reasonable request.

REFERENCES

1. World Health Organization. Making older persons visible in the Sustainable Development Goal's monitoring framework and indicators: World Health Organization; 2024.
2. Firooznia R, Dargahi H, Khaledian Z, JAFARI KT. Strengths and weaknesses of maternal health program evaluation tools in Iranian primary health care system. 2018.
3.Howard-Grabman L, Miltenburg AS, Marston C, Portela A. Factors affecting effective community participation in maternal and newborn health programme planning, implementation and quality of care interventions. BMC pregnancy and childbirth. 2017;17:1-18.
4. zerbib r. the importance of the mother's self-care to her wellness and the obstacles on the way. Department of Psychology Varna Free University "Chernorizets Hrabar", 2022.
5. Alibabaei M, Torkashvand Moradabadi M, Kalateh Sadati A. Mothers' experiences of pregnancy care: A qualitative study. Payesh (Health Monitor). 2024;23(2):245-57.
6. Momeni M, Akhlaghi M, Ahmadi A, Faghih S. Undesirable knowledge and practice of mothers about under 2 years old children nutrition are related to socio-economic factors in Shiraz, Southern Iran. International Journal of Nutrition Sciences. 2018;3(4):192-7.
7. Wang J. Unpacking the Significance of Health Literacy: Impact on Healthcare Outcomes, Economic Implications, and Health Disparities. Lecture Notes in Education Psychology and Public Media. 2024;47(1):174-9.
8. Osborne RH, Elmer S, Hawkins M, Cheng CC, Batterham RW, Dias S, et al. Health literacy development is central to the prevention and control of non-communicable diseases. BMJ Global Health. 2022;7(12):e010362.
9. Kendir C, Breton E. Health literacy: from a property of individuals to one of communities. International journal of environmental research and public health. 2020;17(5):1601.
10. Organization WH. Health literacy toolkit for low-and middle-income countries: A series of information sheets to empower communities and strengthen health systems: WHO Regional Office for South-East Asia; 2015.

11. Gibson C, Smith D, Morrison AK. Improving health literacy knowledge, behaviors, and confidence with interactive training. HLRP: Health Literacy Research and Practice. 2022;6(2):e113-e20.
12. Bayati T, Dehghan A, Bonyadi F, Bazrafkan L. Investigating the effect of education on health literacy and its relation to health-promoting behaviors in health center. Journal of education and health promotion. 2018;7.
13. Battineni G, Baldoni S, Chintalapudi N, Sagaro GG, Pallotta G, Nittari G, et al. Factors affecting the quality and reliability of online health information. Digital health. 2020;6:205520762094899 6.
14. Tsirintani M. Web Quality Assurance of Information in Healthcare. Advances in Informatics, Management and Technology in Healthcare: IOS Press; 2022. p. 442-5.
15. Montazeri A, Tavousi M, Rakhshani F, Azin SA, Jahangiri K, Ebadi M, et al. Health Literacy for Iranian Adults (HELIA): development and psychometric properties. 2014.
16. Ebrahimpour F, Hasandoost F, Namazi S. Health literacy of mothers in Ghods children's hospital, Qazvin. Journal of Health. 2020;11(4):574-83.
17. Morteza-Nejad SHRF, Yektakooshali M, Moshtaghikojal S, Salmalian Z, Ramezani A, Esmaeilpourbandboni M. Health literacy and its related factors in infant's mothers. Journal of Education and Community Health. 2019;6(4):239-45.
18. Kharazi SS, 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.
19. Sentell T, Agner J, Pitt R, Davis J, Guo M, McFarlane E. Considering health literacy, health decision making, and health communication in the social networks of vulnerable new mothers in Hawai ʻi: a pilot feasibility study. International journal of environmental research and public health. 2020;17(7):2356.
20. Shayganmehr MA. New technology adoption of Internet of Things in Iranian Healthcare centers: Ferdowsi University of Mashhad; 2020.
21. Phommachanh S, Essink DR, Wright PE, Broerse JE, Mayxay M. Maternal health literacy on mother and child health care: A community cluster survey in two southern provinces in Laos. Plos one. 2021;16(3):e0244181.
22. Nodoshan T, Pirzadeh A, Nasirian M. The Relationship between Maternal Health Literacy and Pregnancy Status in New Mothers who Referred to Health Centers of Yazd. The Journal of Tolooebehdasht. 2020.
23. Brandstetter S, Atzendorf J, Seelbach-Göbel B, Melter M, Kabesch M, Apfelbacher C, et al. Sociodemographic factors associated with health literacy in a large sample of mothers of newborn children: cross-sectional findings from the KUNO-Kids birth cohort study. European journal of pediatrics. 2020;179:165-9.
24. Sahrayi M, Panahi R, Kazemi S-s, Rostam Z-G, Rezaei H, Jorvand R. The study of Health Literacy of adults in Karaj. Journal of Health Literacy. 2017;1(4):230-8.
25. Graus TM, Brandstetter S, Seelbach-Göbel B, Melter M, Kabesch M, Apfelbacher C, et al. Breastfeeding behavior is not associated with health literacy: evidence from the German KUNO-Kids birth cohort study. Archives of gynecology and obstetrics. 2021;304(5):1161-8.
26. Dharmawan Y, Mawarni A, Handayani N, Pradana AR. Knowledge & attitudes towards family use of maternal child health handbook. 2021.
27. Khedri M, Jafari E, Hosseini LM. Tele-obstetric Applications: Revolutionizing Prenatal Care and Maternal Health. The Journal of Telemedicine. 2024 Apr 2;1(1):10-5.