Original Article

The Relationship Between Health Literacy and Educational, Demographic, and Occupational Factors Among Adults in Kerman, Iran

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Abstract

Background: Health literacy is a critical determinant of health and a central priority in public health policy. This study aimed to examine the level of health literacy and its associated factors among adults aged 18-65 years within the population served by Kerman University of Medical Sciences in 2025.

Methods: This cross-sectional study was conducted among 1,323 participants selected through a multi-stage sampling method. The Iranian Health Literacy Questionnaire (IHLQ) was employed to assess multiple domains of health literacy, including reading, comprehension, communication/decision-making, and interpretation/judgment skills, personal and social empowerment, access to health information, and utilization of health information. Descriptive indices and 95% confidence intervals for overall and domain-specific health literacy were calculated using weights based on the inverse of the sampling fraction for each city.

Results: The participants had a mean age of 38.05 ± 11.25 years, and their mean health literacy score was 12.7 ± 3.4 (out of 20). A total of 474 participants (weighted percentage = 36.8%) demonstrated adequate health literacy. In the multiple linear regression model, university education ($P < 0.001$), female gender ($P < 0.001$), and permanent employment ($P < 0.001$) remained significantly associated with higher health literacy. Conversely, the mean health literacy score significantly decreased with advancing age ($P = 0.003$).

Conclusion: According to the findings of this study, individuals with lower education levels, older age, and those who are homemakers, unemployed, or engaged in informal or variable-income occupations had lower mean health literacy scores. These results underscore the necessity for comprehensive educational initiatives and the development of effective media strategies tailored to improve the communication of health messages among populations with lower literacy levels.

Keywords: Self-care, Health literacy, Preventive health, Population study, Health behavior

Introduction

Health literacy encompasses a broad spectrum of knowledge and skills required to access, process, understand, and apply health information effectively (1). It constitutes a specific set of cognitive and social competencies that determine individuals' motivation and capacity to obtain, comprehend, and utilize information in ways that promote and maintain their health (2,3). As a social determinant of health, health literacy plays a fundamental role in health education and promotion, serving as a key mechanism for improving health outcomes and reducing health disparities (4).

Extensive studies in Iran and worldwide have examined health literacy across diverse population groups, producing varying results due to differences in study populations and assessment tools. For example, in 2019, 84.6% of the general population in Catalonia demonstrated adequate health literacy (5), whereas in 2022, 5% of Portuguese adults over 16 years exhibited high health literacy and 7.5% had insufficient literacy (6). In Germany, 58.8% of the population was reported to have low health literacy in 2021 (7). Among Iranian adults aged 18-65 years, results have also been heterogeneous. Keshvardoost and Heidarpoor found that only 0.6% of participants had excellent health literacy (8), while Haghdoost et al (9), Naghibi et al (10), Jahani eftekhari et

al (11), and Hosseinzadeh et al (12) reported relatively low literacy levels. Conversely, Bavandpour et al (13) observed moderate literacy, and studies by Nezhadhossein et al (14), Kamalipour et al (15), Ghaffari et al (16), Gholami et al (17), and Mahmoudiani et al (18) indicated sufficient or satisfactory health literacy.

Although individual health literacy varies with personal learning, it is also influenced by demographic, cultural, and social factors (17). Many studies have reported a positive association between health literacy and higher educational attainment (6, 7, 9, 17–19). Findings regarding age are inconsistent: some studies indicate declining literacy with increasing age (10–12, 14, 19–24), whereas others report higher literacy among older adults (9, 18, 25).

Studies examining gender differences in health literacy have produced mixed results. Some studies indicate higher literacy among women (7, 9, 11, 25), while others report higher literacy among men (6), and several studies observed no significant gender differences in health literacy (5, 12, 16–18, 20). Multivariate logistic regression in China revealed that living in rural areas, smaller household size, younger age, and lower family income were associated with weaker health literacy (4). Similarly, Güner et al reported that health education and skills often do not match service provision in some U.S. states, highlighting the need to improve public comprehension of health information. They also noted that community health workers frequently lack the skills necessary to enhance clients' health knowledge effectively (26).

Health literacy is closely linked to the utilization of preventive healthcare services (27). Low literacy is associated with adverse outcomes, including increased disease prevalence, elevated health risks, reduced patient capacity for informed decision-making, and lower levels of disease prevention (28). Conversely, improving health literacy enhances patients' ability to make informed decisions, promotes safety, improves quality of life, and elevates standards of care (29, 30). Assessing health literacy across populations provides a valuable tool for ensuring efficient access to health information, informing policy development, and minimizing resource waste (12). Given the absence of studies assessing health literacy among citizens in Kerman, the present study aimed to evaluate the health literacy of adults aged 18–65 years under the coverage of Kerman University of Medical Sciences, to promote community health through targeted education and literacy enhancement.

Materials and Methods

This cross-sectional descriptive-analytical study was conducted in 2025 with the participation of 1,323 adults aged 18–65 years covered by Kerman University of Medical Sciences. The participants were selected using multi-stage sampling. Utilizing the following formula, the sample size was estimated based on a study by Haghdoost et al (9), considering a type I error of 0.05, a power of 0.90, a probability of adequate health literacy of 0.457, and a margin of error of 0.046, resulting in a total required sample of 1,231 participants.

$$n = \frac{(z_{1-\alpha/2} + z_{1-\beta})^2 \, p(1-p)}{d^2}$$

The samples were proportionally allocated across the population of each county as follows: Orzueeyeh (n = 61), Baft (n = 94), Bardsir (n = 85), Rabor (n = 35), Ravar (n = 45), Zarand (n = 161), Shahrbabak (n = 80), Kerman (n = 732), and Kuhbanan (n = 30). Efforts were made to achieve a balanced representation of both sexes and urban and rural residents.

Data were collected using the Iranian Health Literacy Questionnaire (IHLQ) (31). The questionnaire comprised two sections: a demographic section recording age, gender, marital status, place of residence, education level, and occupation, and a health literacy section covering nine subscales: access to information resources (5 items), information acquisition (6 items), reading ability (5 items), comprehension (8 items), judgment and evaluation (6 items), decision-making and communication (8 items), knowledge (5 items), individual empowerment (6 items), and social empowerment (4 items).

Data collection was conducted via door-to-door surveys. The selection of survey areas followed a systematic approach: at least four points were randomly selected on the urban map. Surveyors started at a designated point facing a fixed direction and rotated clockwise. The first residential passage encountered during rotation was selected, and systematic sampling of all households on both sides of the passage was performed until the target cluster sample size was reached. If the target sample size was not achieved, the surveyor continued clockwise to the next passage. Literate participants completed the questionnaire independently after receiving instructions, while illiterate participants were interviewed in person by the surveyor. Surveyors also ensured gender balance at each urban and rural point and conducted surveys at various times of the day to improve representativeness. The average completion time for each questionnaire was approximately 20 minutes.

The inclusion criteria were age 18–65 years, residency in counties under the coverage of Kerman University of Medical Sciences, and ability to communicate verbally and respond to questions. Refusal to participate was regarded as the exclusion criterion.

Independent variables in this study included age (years), gender (female, male), marital status (never married, married without spouse, married with spouse), place of residence (urban, rural), education (illiterate, primary, secondary, high school diploma, university education), and occupation (student, homemaker, retired,

unemployed, temporary job, self-employed, permanent employment). Health literacy was the primary dependent variable. For descriptive purposes, health literacy was treated as a categorical variable, and for regression analyses, as a continuous variable. Construct scores were initially calculated using Likert scales (0–3 or 0–4), then transformed to a 0–20 scale. Total health literacy scores were obtained by summing correct responses across all items and categorized as follows: poor (<10), moderate (10–14), and adequate (>14).

The demographic variables were summarized using descriptive statistics, including frequency, percentage, mean, and standard deviation. Health literacy and its dimensions were analyzed using weighted survey techniques, with weights defined as the inverse of the sampling fraction for each county. Associations between health literacy scores and relevant variables were assessed using weighted univariate (crude) and multivariate (adjusted) linear regression models. Statistical significance was set at $P<0.05$. Data analyses were performed using STATA-17 software (32).

Ethical Considerations

To ensure ethical compliance, the questionnaires were completed anonymously and with informed consent from the participants. The objectives of the study were explained to the participants, who were assured that their responses would remain confidential and that participation was voluntary, without any form of coercion, threat, or inducement. The protocol for this study was approved by the Ethics Committee of Kerman University of Medical Sciences under the code IR.KMU.REC.1404.175.

Results

This cross-sectional descriptive-analytical study was conducted on 1,323 participants with a mean age of 38.05 ± 11.25 years (37.30 ± 10.65 for women and 39.92 ± 11.86 for men). Among the participants, 53.9% (n = 710) were female, 71.9% (n = 963) were married, and 46.8% (n = 623) resided in rural areas. Regarding the educational levels, 2.2% of the participants (n = 30) were illiterate, 27.0% (n = 370) had a high school diploma, and 53.4% (n = 691) had university-level education. Concerning occupation, 22.5% of the participants (n = 309) were homemakers, 28.9% (n = 379) had permanent employment, and 25.3% (n = 334) were self-employed (Table 1).

The mean health literacy score was 12.7 ± 3.4 on a 0–20 scale. Only 19.4% of the participants (95% CI: 17.4–21.7) demonstrated inadequate health literacy, while 43.8% of the participants (95% CI: 41.1–46.6) had moderate literacy, and 36.8% (95% CI: 34.1–39.5) exhibited adequate health literacy (Table 2).

Data analysis indicated that the mean health literacy score significantly decreased with increasing age in both the unadjusted model ($P<0.001$) and the adjusted model ($P=0.003$). In both models, women had significantly higher mean health literacy scores compared to men ($P<0.001$). A significant association was also observed between educational level and mean health literacy score ($P<0.001$), with university-educated individuals exhibiting higher health literacy than those with a high school diploma or lower education. The participants with permanent employment had significantly higher health literacy scores than homemakers, retirees, unemployed individuals, and those in self-employed or temporary jobs ($P<0.001$).

In the unadjusted model, urban residents demonstrated higher mean health literacy scores than rural residents ($P=0.002$). Moreover, single participants had higher literacy scores compared to married individuals ($P=0.01$), while married individuals without a spouse had lower scores than married participants with a spouse ($P<0.001$). However, in the adjusted model, no statistically significant differences were observed in health literacy scores based on place of residence (urban vs. rural, $P=0.322$) or marital status (Table 3).

Discussion

The present study assessed health literacy and determined some associated factors among the population aged 18–65 years covered by Kerman University of Medical Sciences in 2025. In this study, the mean health literacy score was 12.7 ± 3.4 out of 20, and 43.8% of the participants demonstrated moderate health literacy. Findings from several national studies have indicated a relatively low level of health literacy in Iran (10–12, 24). The mean health literacy score of residents in Kermanshah County was calculated to be moderate (13), whereas health literacy levels in Behbahan County (14) and among the majority of Hormozgan residents were reported as favorable (20). A considerable proportion (59%) of respondents in Shiraz had adequate health literacy (18). Similarly, half of the marginalized population under the coverage of Sabzevar University of Medical Sciences also demonstrated sufficient health literacy (16). In Ilam, 36% of the sample had adequate health literacy, and 44.6% had excellent health literacy (17). Among adults in Jahrom County, 86.62% demonstrated sufficient health literacy (15). Internationally, 58.8% of adults over 18 in the study by Schaeffer et al in Germany exhibited low health literacy (7), whereas 84.6% of the general population in Catalonia had adequate health literacy (5), and 70% of Portuguese adults over 16 demonstrated adequate or high literacy, with 7 out of 10 individuals having a high level of health literacy (6). Conflicting results across these studies may partly be attributed to the use of different health literacy assessment tools. Although the mean health literacy score in the present study was slightly higher than that reported in the national study by Haghdoost et al (9), which aimed

Table 1. Health literacy levels by demographic variables in the studied population

Variable	Categories	Poor (Weighted %, n) [95% CI]	Moderate (Weighted %, n) [95% CI]	Adequate (Weighted %, n) [95% CI]	Total (Weighted %, n)
Gender	Male	139 (53.6) [47.4–59.8]	288 (49.2) [45.1–53.3]	186 (38.4) [34.1–42.9]	613 (46.1)
	Female	119 (46.3) [40.2–52.6]	303 (50.8) [46.7–54.9]	288 (61.6) [57.1–65.9]	710 (53.9)
Place of Residence	Urban	144 (56.4) [50.1–62.4]	271 (45.6) [41.5–49.7]	208 (43.1) [38.6–47.7]	623 (46.8)
	Rural	114 (43.6) [37.6–49.9]	320 (54.4) [50.3–58.5]	266 (56.9) [52.3–61.4]	700 (53.2)
Marital Status	Never married	42 (16.7) [12.5–22.1]	141 (24.6) [21.1–28.3]	111 (24.4) [20.6–28.6]	294 (23.0)
	Married without a spouse	28 (11.3) [7.9–16.0]	21 (3.6) [2.3–5.5]	17 (3.5) [2.2–5.7]	66 (5.1)
	Married with a spouse	188 (72.0) [66.0–77.3]	429 (71.8) [67.9–75.4]	346 (72.1) [67.7–76.0]	963 (71.9)
Education	Illiterate	25 (9.2) [6.2–13.4]	2 (0.30) [1.0–1.4]	3 (0.6) [0.1–2.0]	30 (2.2)
	Primary	79 (31.0) [25.5–37.1]	67 (10.6) [8.4–13.4]	20 (4.3) [2.8–6.7]	166 (12.3)
	Secondary	29 (12.2) [8.5–17.0]	28 (4.7) [3.2–6.8]	9 (1.9) [1.0–3.6]	66 (5.1)
	High school diploma	66 (24.1) [19.2–29.7]	190 (32.2) [28.5–36.2]	114 (24.4) [18.9–26.4]	370 (27.0)
	University education	59 (23.5) [18.6–29.2]	304 (52.0) [47.9–56.1]	328 (70.7) [66.4–74.7]	691 (53.4)
Occupation	Student	7 (2.5) [1.1–5.2]	45 (7.7) [5.8–10.2]	54 (12.4) [9.6–15.9]	106 (8.4)
	Homemaker	78 (29.2) [23.9–35.2]	148 (24.6) [21.2–28.2]	83 (16.5) [13.4–20.1]	309 (22.5)
	Retired	30 (12.1) [8.6–16.9]	39 (6.2) [4.6–8.6]	17 (3.6) [2.2–5.8]	86 (6.4)
	Unemployed	27 (11.0) [7.6–15.7]	28 (4.7) [3.3–6.9]	8 (1.7) [0.8–3.4]	63 (4.9)
	Temporary job	3 (1.4) [0.4–4.2]	19 (3.3) [2.1–5.1]	24 (5.1) [3.4–7.6]	46 (3.6)
	Self-employed	81 (30.9) [25.4–36.9]	162 (27.7) [24.2–31.6]	91 (19.4) [16.0–23.3]	334 (25.3)
	Permanent employment	32 (12.8) [9.2–17.7]	150 (25.6) [22.2–29.4]	197 (41.2) [36.8–45.8]	379 (28.9)

Table 2. Distribution of the mean scores of health literacy components in the studied population

Health literacy component	Mean Score (SD) [95% CI]	Poor (Weighted %, n) [95% CI]	Moderate (Weighted %, n) [95% CI]	Adequate (Weighted %, n) [95% CI]
Overall health literacy	12.7 (3.4) [12.5–12.9]	258 (19.4) [17.4–21.7]	591 (43.8) [41.1–46.6]	474 (36.8) [34.1–39.5]
Access to information sources	12.2 (5.7) [11.9–12.5]	490 (36.9) [34.25–39.6]	361 (27.1) [24.7–29.6]	472 (36.0) [33.4–38.7]
Information acquisition	11.4 (5.8) [11.0–11.7]	406 (30.1) [27.7–32.7]	547 (41.7) [39.0–44.5]	370 (28.2) [25.7–30.7]
Reading ability	11.7 (4.8) [11.4–11.9]	472 (35.5) [32.9–38.2]	501 (37.5) [34.9–40.2]	350 (27.0) [24.6–29.5]
Comprehension ability	13.7 (4.0) [13.5–13.9]	203 (14.9) [13.1–17.0]	517 (39.0) [36.3–41.7]	603 (46.1) [43.4–48.9]
Judgment and evaluation	14.1 (4.0) [13.8–14.3]	137 (10.5) [8.9–12.3]	578 (43.3) [40.6–46.0]	608 (46.2) [43.5–49.0]
Decision-making and communication skills	13.3 (4.6) [13.1–13.6]	199 (15.0) [13.2–17.1]	544 (41.1) [38.4–43.8]	580 (43.9) [41.2–46.6]
Knowledge	14.1 (5.8) [13.8–14.4]	320 (24.5) [22.2–26.9]	235 (17.3) [15.4–19.5]	768 (58.2) [55.5–60.9]
Individual empowerment	9.6 (6.6) [9.3–10.0]	585 (43.4) [40.7–46.1]	352 (26.8) [24.4–29.3]	386 (29.8) [27.3–32.4]
Social empowerment	9.6 (6.1) [9.3–10.0]	512 (39.1) [36.4–41.8]	449 (34.2) [31.6–36.8]	362 (26.8) [24.4–29.3]

to determine health literacy levels among the general adult population in Iran using the IHLQ, the results remain concerning. Health literacy is a critical component of self-care, reflecting individuals' ability to acquire, process, and understand health information, enabling them to make informed decisions about their health (33).

Individuals with limited health literacy are less likely to comprehend written and verbal information provided by health professionals and follow recommendations, resulting in poorer health outcomes and higher medical costs. Consequently, inadequate health literacy is recognized as a global health threat (22, 28). Accordingly,

Table 3. Association between health literacy and independent variables in the unadjusted and adjusted models in the studied population

Independent Variable	Categories	Weighted Mean Health Literacy Score [95% CI]	Univariate Linear Regression		Multivariate Linear Regression	
			β	P-value	β	P value
Age (years)		---	-0.08	<0.001	-0.03	0.003
Gender	Male	12.22 [11.95–12.49]	-0.87	<0.001	-0.71	<0.001
	Female (Reference)	13.09 [12.83–13.35]	-	-	-	-
Residence	Rural	12.37 [12.08–12.66]	-0.60	0.002	0.16	0.322
	Urban (Reference)	12.97 [12.73–13.22]	-	-	-	-
Marital Status	Never married	13.22 [12.85–13.59]	0.55	0.013	-0.04	0.876
	Married without a spouse	10.62 [9.57–11.67]	-2.05	<0.001	-0.39	0.381
	Married with spouse (Reference)	12.67 [12.46–12.89]	-	-	-	-
Education	Illiterate	7.48 [6.02–8.49]	-6.34	<0.001	-4.85	<0.001
	Primary	9.39 [9.38–10.47]	-3.89	<0.001	-2.65	<0.001
	Secondary	10.49 [9.76–11.22]	-3.33	<0.001	-2.40	<0.001
	High school diploma	12.54 [12.25–12.84]	-1.27	<0.001	-0.63	0.001
	University education (Reference)	13.82 [13.60–14.04]	-	-	-	-
Occupation	Student	14.18 [13.59–14.70]	0.13	0.711	-0.20	0.557
	Homemaker	11.81 [11.42–12.19]	-2.25	<0.001	-1.45	<0.001
	Retired	11.04 [10.32–11.76]	-3.01	<0.001	-0.85	0.044
	Unemployed	10.45 [9.54–11.36]	-3.60	<0.001	-2.21	<0.001
	Temporary job	14.41 [13.59–15.24]	0.36	0.424	0.36	0.393
	Self-employed	12.03 [11.69–12.36]	-2.03	<0.001	-1.03	<0.001
	Permanent job (Reference)	14.05 [13.74–14.37]	-	-	-	-

designing comprehensive health promotion programs and implementing targeted courses aimed at maintaining and improving healthy lifestyles are essential to enhance health literacy and health-related skills in communities.

Consistent with previous studies (6, 7, 10, 12, 14, 19, 20, 24), the present study demonstrated a significant negative correlation between age and health literacy, indicating that mean health literacy scores decreased with increasing age. However, Haghdoost et al reported a slight increase in health literacy with age in the Iranian population (9). Similarly, Zolfaghari et al who examined health literacy and demographic variables among citizens of Yazd, found that older individuals' greater use of social networks and local media contributed to higher health literacy levels (25). Conversely, other studies did not find a significant relationship between age and mean health literacy scores (13, 15, 17). The finding that younger individuals exhibited higher health literacy scores may be attributed to advances in technology and greater familiarity of younger populations with modern science and technology, including widespread use of smartphones and social media by younger and middle-aged adults. Studies by Mohamadloo et al (22), Sayadi et al (21), and Mirmohammadkhani et al (23), through systematic reviews and meta-analyses of health literacy among Iranian older adults, consistently reported low health literacy levels in this population. These findings highlight a critical concern for primary healthcare delivery systems.

Given the importance of health literacy and its impact on various life indicators, there is a pressing need for effective planning and interventions aimed at improving health literacy among older adults, a rapidly growing segment of society (23).

As expected and consistent with previous studies (6, 7, 9, 17–19), mean health literacy scores were significantly associated with higher levels of education, with individuals holding university-level or higher education demonstrating higher health literacy compared to those with a diploma or lower education levels (illiterate, primary, or secondary education). In the existing literature, education is recognized as a key determinant of health literacy (34). Higher educational attainment in a population is indicative of a potential increase in overall health literacy. Individuals with higher literacy levels are better able to comprehend and effectively apply health information and instructions, whereas those with lower literacy levels may struggle to understand and utilize health-related information. Adequate health literacy is therefore essential for individuals' active participation in healthcare systems, empowering them to apply health knowledge and recommendations effectively. Consequently, healthcare professionals should tailor educational programs and interventions according to the literacy levels of their target population. Employing effective communication methods, using simple and comprehensible concepts, adjusting the pace

of information delivery, and engaging participants in discussions are strategies that warrant attention.

Consistent with the studies by Haghdoost et al (9), Abedini et al (20), Gholami et al (17), and Mahmoudiani et al (18), data analysis in the present study revealed a significant correlation between occupation and health literacy. Individuals with permanent jobs and stable income had higher mean health literacy scores compared to others. Similarly, in a study of adults over 16 in Portugal, unemployed individuals exhibited lower health literacy levels (6). However, in studies by Bavandpour et al examining factors influencing health literacy in Kermanshah County (13), and Hosseinzadeh et al assessing health literacy among clients of comprehensive health service centers in Saveh County (12), no significant relationship was found between occupation and health literacy. That is, housewives and unemployed individuals were, in some contexts, as aware of health matters as employed individuals. One explanation is that housewives or retirees may have more time to study, while individuals with permanent employment may have better access to health information in the workplace or greater financial resources to access healthcare services. Furthermore, higher health literacy among those with permanent jobs may be attributable to the higher education typically required to secure such employment. Given that health literacy is a key determinant of self-care behaviors (8), the use of modern educational technologies and targeted focus on different occupational groups can assist policymakers and health planners in improving the quality of educational programs and enhancing community health literacy.

In the present study, the mean health literacy score among women was significantly higher than that of men, which is consistent with the findings reported by Haghdoost et al (9), Ghavi et al (3), Jahani et al (11), Khaleghi et al (35), and Schaeffer et al in Germany (7). In contrast, in the Portuguese study of adults over 16 years, women demonstrated lower health literacy compared to men (6). It appears that women adhere more closely to hygiene principles and medical recommendations than men. Women generally place greater importance on their health, spend more time engaging with media, and devote more time to reading and understanding health-related content. They also show greater interest in routine health check-ups and, overall, exhibit a higher willingness to learn and follow health guidance (3), which in turn affects their health literacy. Since the mean health literacy score among women in this study was in the borderline to moderate range, consistent with other studies conducted in Iran (36), it is hoped that comprehensive educational programs, utilization of mass media, production of simple and comprehensible educational materials, and other effective interventions will contribute to enhancing their health literacy.

Data analysis in this study indicated that, in the unadjusted linear regression model, mean health literacy scores differed significantly between urban and rural residents. However, in the adjusted linear regression model, this association was no longer significant. Consistent with the studies by Bavandpour et al (13) and Li et al in China (19), urban residents had higher mean health literacy scores than rural residents, which was not consistent with the findings reported by Haghdoost et al (9). Nezhadhossein et al (14) and Gholami et al (17) also reported no significant differences in health literacy between urban and rural populations. This discrepancy may be attributed to differences in the questionnaires used; the IHLQ specifically evaluates the ability to access and utilize health resources (9). Urban residents may have higher health literacy due to greater educational opportunities, easier access to the internet, and broader social networks. Considering the Family Physician Program and the higher frequency of visits by rural residents to healthcare providers, the provision of practical and effective health education by healthcare staff in these settings could be highly beneficial.

In this study, the unadjusted linear regression model showed a significant association between marital status and mean health literacy scores, while the adjusted model did not confirm such a relationship. Specifically, single individuals had higher health literacy scores compared to married individuals, and married individuals without spouses had lower scores compared to those with spouses. In contrast, Zolfaghari et al in their study of Yezd residents, reported that married individuals rated their health literacy higher than single individuals (25). Similarly, Mahmoudiani et al found a significant association between marital status and health literacy, with widows scoring highest and divorced individuals having the lowest scores (18). Khaleghi et al also reported significantly higher health literacy among married students (35). These findings are inconsistent with studies conducted by Hosseinzadeh et al (12) and Bavandpour et al (13), demonstrating no significant relationship between marital status and health literacy. It appears that single individuals, having fewer responsibilities toward a spouse or children, may have more time than married individuals to study and access media and social networks, increasing their exposure to educational materials. Conversely, it is expected that married individuals would have a greater sense of responsibility for their own health literacy and that of their family members, providing more motivation to seek and apply health information (25). Since educational interventions based on self-efficacy and health literacy can play a crucial role in improving maternal health (37), and considering that married individuals more frequently visit comprehensive health service centers, the implementation of structured training programs and effective information dissemination strategies can enhance health literacy and

empower this group.

Limitations

The limitations of this study were the use of self-reported measures and reliance on questionnaires for data collection. To better understand the factors influencing health literacy, conducting qualitative studies and employing in-depth interview methods for data collection is recommended.

Conclusion

According to the findings of this study, individuals with lower education levels, older age, and those who are homemakers, unemployed, or engaged in informal or variable-income occupations had lower mean health literacy scores. Given that educational interventions are effective in enhancing self-efficacy and health literacy, and that health literacy improves the comprehension of health information, enables appropriate decision-making in disease management, and facilitates access to optimal healthcare services, low health literacy can act as a barrier to understanding health messages and recommendations. Moreover, considering that improving health literacy requires cultural development, continuous education, and inter- and intra-sectoral collaboration, it is hoped that the implementation of comprehensive programs, effective educational interventions, and the production of simple and comprehensible media and educational materials for adults, especially those with lower education levels and variable-income occupations, who are considered socially vulnerable groups, can contribute to developing health literacy skills and promoting overall health.

Authors' Contribution

Conceptualization and design: Fatemeh Balali Meybodi, VahidReza Borhaninejad, Mina Sharafi.
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