



Health Literacy of Pre-Service Teachers from Farhangian University: A Cross-Sectional Survey

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Abstract

Background: Teachers play a critical role as health promoters. However, relatively little knowledge is available to date about health literacy of pre-service teachers in Iran.

Objectives: The aim of this study was to determine the health literacy level of pre-service teachers from Farhangian University in Tehran, Iran.

Methods: A cross-sectional study was conducted on a representative random sample of pre-service teachers stratified by major and gender from May to June 2015. Health literacy was measured using the health literacy for adults (HELIA) questionnaire, with 33 items on the domains of access to health information, reading, understanding, appraisal, and behavioral intention. SPSS version 20 was employed to analyze data using statistics including mean, standard deviation, and frequency, *t*-test and ANOVA.

Results: In total, 704 pre-service teachers participated in the study. The mean age of the participants was 20.88 ± 1.43 and 65.8% were female. The health literacy score was 66.30 ± 12.66 . Inadequate health literacy was found in 7.3% of the participants, problematic health literacy in 43.3%, sufficient health literacy in 38.5%, and excellent health literacy in 10.9%. Health literacy was significantly associated with age, gender, and marital status.

Conclusions: As the high prevalence of limited health literacy in teachers is a barrier to enhancing the health literacy of students at schools, there is a need to design, implement, and evaluate different educational interventions to address health literacy among pre-service teachers.

Keywords: Health Literacy, HELIA, Teacher Education, Pre-Service Teachers

1. Background

Health literacy is a multifaceted concept that makes individuals accountable for their health. It is defined as “people’s knowledge, motivation, and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning healthcare, disease prevention, and health promotion to maintain or improve quality of life during the life course” (1).

The construct of health literacy was first used in a 1974 paper in which the author demanded incorporating health literacy into school curriculums (2). Health is the first objective of education in “the Cardinal Principles of Secondary Education” (3). Achieving this aim, i.e., promoting the health literacy of students at schools, depends on the quality of teacher education programs. By promoting the health literacy of pre-service teachers, they not only try to avoid unhealthy behaviors but also help develop

their future students’ wellbeing (4). The literature indicates that classroom activities that promote health have a great value for those teachers who have the experience of health promotion activities (5). One factor that causes the poor quality of health education at schools is insufficient teacher training (6). Many teachers feel incapable of addressing health-related issues (7).

To date, HL research has focused on different populations. A recent study in Europe showed that 47% of respondents did not have adequate health literacy (8). A study on health literacy among an Irish adult population found that about 14% of the participants who completed the S-TOFHLA questionnaire had limited health literacy (9). Another study in Texas, USA, disclosed that 52% of high school students had an inadequate level of health literacy (10). A study conducted on 500 in-service teachers in Turkey showed adequate health literacy only in 26.2% of the participants (11). In Iran, few studies have been carried out for determining health literacy, all of which show a low level

of health literacy. For example, a recent study found that most Iranian elderly people (52.5%) had inadequate health literacy (12).

The level of health literacy among pre-service teachers is of importance because they are responsible for promoting the health of students at schools. To our knowledge, there is no study concerning health literacy status among pre-service teachers in Iran, as well as other countries.

To address this shortcoming, this study aimed to assess the level of health literacy of pre-service teachers in Iran to help decision makers design different learning opportunities to promote the health literacy of this important health promoters. Another aim of the study was to examine socio-demographic characteristics with possible associations with inadequate HL. Therefore, the research questions included the following:

- What is the current status of health literacy level in pre-service teachers from Farhangian University in Tehran province, Iran?
- To what extent the dimensions of health literacy are related to socio-demographic characteristics?

2. Methods

This cross-sectional survey was conducted at six teacher education colleges of Farhangian University in Tehran, Iran.

2.1. Participants

The statistical population included the pre-service teachers of six teacher education colleges at Farhangian University in Tehran, Iran (N = 3492 by the end of April 2015). A representative random sample of 301 participants was selected comprising 210 women and 91 men stratified by major and gender. However, since the questionnaires were completed during class time, the number of participants increased and finally, 704 complete questionnaires from 463 women and 241 men were collected.

2.2. Instrumentation

Health literacy was assessed using the health literacy for adults (HELIA) questionnaire as a standard questionnaire in Iran (13). It included a demographic data section for variables such as age, gender, and marital status and another section with 33 items on the five main dimensions of health literacy, i.e., reading, accessing, understanding, appraising, and applying health information. The following formula was used to standardize the raw scores on a metric scale between 0 and 100: (the raw score - the lowest possible raw score / the highest possible point - the lowest possible point) $\times 100$. In this formula, a point refers to the

score for each dimension. The health literacy score was divided into four categories: inadequate (score: 0 - 50), problematic (score: 50.1 - 66), sufficient (score: 66.1 - 84), and excellent (score: 84.1 - 100). Inadequate and problematic health literacy levels were combined to create the category of limited health literacy while the combination of sufficient and excellent health literacy made the category of satisfied health literacy. The internal consistency of the HELIA questionnaire was satisfactory (Cronbach's α : 0.89). Along with the field testing of the questionnaire, five experts evaluated its content validity.

2.3. Procedure

The main survey was carried out over a four-week period between May and June 2015. The first author (FZA) administered the questionnaires. The researchers were authorized by the National Teacher Education University to visit pre-service teacher classes at the colleges during the spring semester 2015. During the class visits, the purpose and procedure of the survey were explained to students. They were encouraged to complete the questionnaire truthfully and assured that the anonymity of the participants would be maintained. The questionnaire took about 20 to 25 min to complete.

2.4. Data Analysis

SPSS version 20 was used to analyze the data. Descriptive statistics of mean, standard deviation, and frequency and inferential tests of *t*-test and analysis of variance (ANOVA) were used for data analysis. Descriptive statistics were used to present the participants' demographics, as well as the health literacy levels. The normality of data was tested before conducting inferential statistics. The *t*-test and ANOVA were performed to test the relationship between health literacy and demographic variables.

3. Results

3.1. Characteristics of the Participants

Detailed socio-demographic characteristics of the participants are shown in Table 1. In total, 704 completed questionnaires were collected.

The mean age of the participants was 20.88 ± 1.43 in the range of 18 to 26 years. The minority of the respondents were married (17.5%). Moreover, 70.2% were living in Tehran, the capital of Iran, and the others were from other cities.

Table 2 shows that the mean total score of health literacy, according to the HELIA questionnaire, was $66.30 \pm$

Table 1. The Profile of the Study Population

Characteristics	No. (%)
Age, mean \pm SD	20.88 \pm 1.43
Gender	704 (100)
Male	241 (34.2)
Female	463 (65.8)
Marital status	
Single	571 (81.1)
Married	123 (17.5)
No answer	10 (1.4)
Residence in Tehran	
Yes	494 (70.2)
No	181 (25.7)
No answer	29 (4.1)
Family size	
\leq 2	50 (7.1)
3 - 5	531 (75.4)
\geq 6	78 (11.1)
No answer	45 (6.4)

12.66. Concerning the five dimensions of reading, accessing, understanding, appraising, and applying health information, the mean score was lowest in applying health information 52.92 ± 30.95 and highest in understanding health information 69.75 ± 25.51 .

Overall, 285 participants (49.4%) had limited health literacy and 292 (50.6%) had satisfied health literacy. It means that one of two (49.4%) in the total study population had limited health literacy. Moreover, 46.2% had limited health literacy for reading health information and 43.8% had limited access to health information. The majority of the participants (69.3%) had satisfied health literacy for understanding health information. Appraising and applying health information was limited in 54.3% and 57.1% of the participants, respectively.

Table 3 shows the association of the total health literacy scores with gender, age, marital status, residence place, and family size. Men had significantly lower health literacy scores than women (64.14 ± 12.34 in men and 67.46 ± 12.69 in women). The participants who were in the age group of less than or equal to 20 had a significantly lower level of health literacy ($P = 0.004$). We found significant differences between the health literacy score of married and single participants ($P < 0.05$). No significant differences in health literacy scores were identified between the groups of residence place and study year ($P = 0.81$). There was no statistically significant association between the family size and the health literacy score ($P = 0.82$).

4. Discussion

The aim of this study was to assess the level of health literacy in a group of pre-service teachers in Iran to help decision makers make sound decisions to implement various programs addressing the health literacy of teachers. The study also aimed to examine the demographic characteristics associated with satisfied and limited levels of health literacy.

As mentioned earlier, having adequate health literacy is critical for teachers. They are responsible for maintaining their own health. Additionally, they are responsible for developing students' internal capacity not only to read and understand health-related information but also to live healthy in a world with health inequalities. In doing so, they can contribute to the empowerment of students to transform the world through action and reflection upon it (14). This study, however, demonstrated that the mean health literacy score of pre-service teachers was 66.30 ± 12.66 of a maximum score of 100, demonstrating an overall limited level of health literacy in the study sample. About half of the study participants had limited health literacy. This is in line with Tavousi et al. study (12) that found 44% of Iranian citizens had limited health literacy and in agreement with Ansari et al. (15) who reported that 38.8% of older adults in the Southeast of Iran had inadequate health literacy. It is also very close to a 2015 study in European Union that reported almost 1 in 2 of European citizens had limited health literacy (8). This figure was reported as 15.5% in Japan (16). However, it seems that the percentage of adults with low health literacy is underestimated in Japan due to employing a single-item questionnaire.

It is important to note that the limited health literacy of the sample in the current study makes a worrying situation since teachers are expected to promote the health literacy of their students (17). Furthermore, the low level of health literacy is associated with poorer physical and mental health (18). As Berkman et al. showed, individuals with limited health literacy displayed fewer preventive health behaviors such as influenza immunization and mammography screening. They also showed the increased use of emergency care and hospitalizations (19). The adverse health outcomes associated with low health literacy would threaten teachers' educational activities due to frequent work loss. Therefore, interventions are urgently needed to address the health literacy of pre-service and in-service teachers.

With regard to the dimensions of health literacy, the mean score was lowest in the dimension of applying health information (52.92 ± 30.95) and highest in understanding health information (69.75 ± 25.51). This result is in line with van der Heide et al. study (20) that showed the mean

Table 2. Health Literacy Levels and its Dimensions Among the Participants^a

Dimension	Mean ± SD	Inadequate	Problematic	Adequate	Excellent	Limited Health Literacy	Satisfied Health Literacy
Reading	64.54 ± 23.48	165 (24)	153 (22.2)	244 (35.5)	126 (18.3)	318 (46.2)	370 (53.8)
Accessing	62.50 ± 26.03	139 (20.7)	155 (23.1)	277 (41.3)	99 (14.8)	294 (43.8)	376 (56.1)
Understanding	69.75 ± 25.51	62 (9.2)	145 (21.5)	264 (39.2)	203 (30.1)	207 (30.7)	467 (69.3)
Appraising	61.66 ± 21.98	161 (23.5)	211 (30.8)	235 (34.4)	77 (11.3)	372 (54.3)	312 (45.7)
Applying	52.92 ± 30.95	174 (27.6)	186 (29.5)	215 (34.1)	56 (8.9)	360 (57.1)	271 (43)
Total score	66.30 ± 12.66	63 (10.9)	222 (38.5)	250 (43.3)	42 (7.3)	285 (49.4)	292 (50.6)

^aValues are expressed as mean ± SD or No. (%).

Table 3. The Mean Health Literacy Scores by Gender, Age, Marital Status, Place of Residence and Family Size

Demographic Characteristics	Health Literacy Score, Mean ± SD	F/T	P Value
Gender		3.49	0.003
Male	64.14 ± 12.34		
Female	67.46 ± 12.69		
Age		2.38	0.004
Less than or equal to 20	63.57 ± 13.09		
Above 20	66.91 ± 13.08		
Marital status		3.67	0.009
Single	66.32 ± 12.52		
Married	66.46 ± 13.42		
Residence in Tehran		2.26	0.81
Yes	66.30 ± 12.89		
No	66.08 ± 12.37		
Family size		1.25	0.82
≤ 2	64.36 ± 13.22		
3 - 5	66.51 ± 12.20		
≥ 6	67.99 ± 12.07		

health literacy score was highest in the understanding dimension.

The study also revealed that socio-demographic characteristics such as gender, age, and marital status were associated significantly with health literacy levels as determined by the HELIA questionnaire. Limited health literacy scores were found among male participants. In terms of health literacy dimensions, the score of reading health information was significantly higher in women than in men. Contradictory results have been reported concerning gender difference in health literacy. Some studies reported that the male gender was associated with limited health literacy (21-23) while others reported more limited health literacy in women (24). The current study found that health

literacy was higher among married participants. This is in line with the findings in the literature (25). In contrast to previous studies that showed low health literacy was more prevalent in older age (26, 27), the present study found that health literacy was lower among younger people. It is in agreement with some previous studies (28, 29).

There are some limitations to this study. First, because the study used a cross-sectional design, a causal relationship cannot be drawn between low health literacy and socio-demographic characteristics. Moreover, the findings of the study are valid for populations from Tehran province and the generalization of the results to populations from other cities of Iran should be avoided because of the potential heterogeneity in the pre-service teachers' population.

4.1. Conclusion

The present study shows that the health literacy level requires enhancing among pre-service teachers. Having limited health literacy is a barrier for teachers to play the role of a health promoter at schools and participate actively in the health promotion of their students. Helping students improve their health can contribute to their academic achievement. Therefore, if we expect to have pupils who are better learners and can take care of their own health, the policymakers have to recognize teacher health literacy as one of their primary objectives. Teacher education decision makers and curriculum leaders must scrutinize written, operational curricula to find ways of working toward increasing pre-service teachers' health literacy over the next few years. Designing different learning opportunities such as developing and delivering a required health literacy curriculum helps pre-service teachers be more prepared in addressing the health and literacy of the future generation.

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Footnotes

Authors' Contribution: Study conception and design: Fatemehzahra Ahmadi and Ali Montazeri; acquisition of data: Fatemehzahra Ahmadi; analysis and interpretation of data: Fatemehzahra Ahmadi and Ali Montazeri; drafting of the manuscript: Fatemehzahra Ahmadi and Ali Montazeri; critical revision: Ali Montazeri.

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