

Examining How Education Affects Health Literacy and How it Relates to Behaviors that Promote Health at Health Centers

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Abstract

Background:

Health literacy is a key determinant of public health and affects the ability to make informed decisions regarding health behaviors. Low health literacy is associated with poor health outcomes, including delayed diagnoses, noncompliance with medical instructions, and higher healthcare costs. This study focuses on the impact of educational interventions on health literacy and its relationship with health-promoting behaviors among health ambassadors in healthcare networks.

Methods:

This study was used to assess the impact of a self-care education program on health literacy and health-promoting behaviors. A total of 300 health ambassadors were selected from health centers within a healthcare network. Participants completed health literacy and health-promoting behavior questionnaires before and after the intervention. The educational program, based on the "Self-care in Minor Morbidities" guidebook, was delivered through a combination of self-paced and in-person learning. Data were analyzed using descriptive and inferential statistics, including t-tests, ANOVA, and Pearson's correlation.

Results:

The study found a significant improvement in health literacy among participants, with the percentage of individuals exhibiting adequate health literacy increasing from 25.8% to 50% after the intervention. Average health literacy scores improved from 79.22 to 95.49. Additionally, health-promoting behaviors, including responsibility, physical activity, nutrition, and stress management, showed significant improvements. A correlation was found between health literacy and education level, as well as a significant difference in physical activity scores based on gender.

Conclusion:

The study demonstrates that educational interventions can significantly improve health literacy and promote healthier behaviors among health ambassadors. These findings highlight the importance of targeted educational programs in enhancing public health by improving self-care practices and fostering a culture of health awareness within communities.

Introduction

Health literacy encompasses a set of skills that include reading, listening, analyzing information, making decisions, and applying these abilities to health-related situations. It is not solely determined by the level of formal education or qualifications. The World Health Organization (WHO) has identified health literacy as a critical determinant of public health (1).

Research has consistently highlighted the negative outcomes associated with low health literacy, such as delays in disease diagnosis, challenges in self-care, higher reliance on emergency medical services, increased prevalence of various health conditions, and elevated mortality rates (2).

A review of studies conducted by Paasche-Orlow et al. in North America found that approximately 26% of individuals exhibited limited health literacy, while another 20% demonstrated borderline proficiency in this area (3). Similarly, a study examining health literacy levels and influencing factors across multiple regions revealed that health literacy remains inadequate, leading to adverse health outcomes (4). Insufficient health literacy contributes to issues like underutilization of preventive healthcare services, delays in diagnosis, noncompliance with medical instructions, a greater risk of hospitalization, increased mortality rates, and significantly higher healthcare costs (5). Health-promoting behaviors serve as a fundamental indicator of overall health and play a preventive role against numerous diseases. Studies have shown that adopting health-promoting behaviors and maintaining a healthy lifestyle can enhance life expectancy and improve overall quality of life (6). These behaviors are crucial for preventing chronic conditions, reducing disease progression, and lessening the overall burden on healthcare systems (7). As a result, promoting health has been recognized as an effective strategy to combat noncommunicable diseases (8). The key components of the health-promoting lifestyle profile (HPLP) include responsibility for personal health, physical activity, proper nutrition, stress management, spiritual growth, and interpersonal relationships (9).

Efforts to improve public health and enhance the quality of life have led to significant advancements in healthcare systems, such as the implementation of universal health coverage programs. These initiatives aim to empower individuals to practice self-care. Self-care involves deliberate, informed actions that individuals take to maintain and protect their physical, mental, and social well-being.

One approach to promoting self-care involves designating a representative from each family to serve as a health ambassador. This individual, chosen on a voluntary basis, is typically required to have at least an 8th-grade education, basic literacy skills, and a sense of social responsibility. The role of the health ambassador is to disseminate health-related knowledge to family members and the broader community while also maintaining their own health. The overarching goal is to foster a culture of self-care that enhances the well-being of families and communities.

Although various studies have explored the relationship between health literacy and health-promoting behaviors in diverse populations, little research has specifically focused on the health literacy levels of health ambassadors. This study aims to assess the impact of educational interventions on health literacy and examine its connection to health-promoting behaviors among health ambassadors working within healthcare networks.

Materials and Methods

The study population included health ambassadors from health and treatment centers within a healthcare network. The inclusion criteria required participants to have at least an 8th-grade education, basic reading and writing skills, a willingness to volunteer as a health ambassador, consent to participate in the study, Iranian nationality, and residence in the selected area. Ambassadors who opted out of the training sessions during the intervention phase were excluded from the study.

A total of 300 health ambassadors, meeting all entry requirements, were randomly selected from the System Integrated Health (SIB) database using a systematic sampling method. These individuals first provided written informed consent and then completed a health behavior promotion questionnaire. Following this, they participated in training sessions based on the "Self-care in Minor Morbidities" guidebook developed by the Ministry of Health and Treatment, which included both self-paced and in-person learning. Four weeks after the educational intervention, the participants completed the same questionnaire again, which was subsequently collected by the researcher.

Data collection involved three questionnaires: one for demographic details, one assessing health literacy, and one on health-promoting behaviors. The demographic questionnaire gathered information about age, marital status, gender, education, occupation, and sources of health information. Health literacy was assessed using the 33-item health literacy questionnaire, developed by Montazeri et al. (10), which utilized a five-point Likert scale.

The content and face validity of the health literacy questionnaire were reviewed and validated by experts, with a Cronbach's alpha value ranging from 0.72 to 0.89, confirming its reliability (10). The responses were measured on a five-point Likert scale (always, often, sometimes, rarely, and never), with scores assigned as 4 (always), 3 (often), 2 (sometimes), 1 (rarely), and 0 (never). The total possible score ranged from 0 to 132. Based on score ranges,

individuals scoring 0–66 were categorized as having inadequate health literacy, 67–100 as having marginal health literacy, and 101–132 as having adequate health literacy.

To assess health-promoting behaviors, the standardized Health-Promoting Lifestyle Profile II (HPLP-II) questionnaire was used. This tool consisted of 52 items, divided into two categories with six subcategories: Category 1 focused on health-promoting behaviors (health responsibility, physical activity, and nutrition), while Category 2 addressed psychosocial well-being (spiritual growth, interpersonal relationships, and stress management). The responses were again based on the five-point Likert scale, with the same scoring system. The scores were calculated across six domains: responsibility, physical activity, nutrition, spiritual growth, interpersonal relationships, and stress management. For each domain, the mean and standard deviation were computed.

The reliability and validity of the HPLP-II questionnaire have been well-established across various populations, including college students, adolescents, and adults (11).

Data analysis was conducted using IBM SPSS version 16 (IBM, USA). Descriptive statistics, frequency distribution tables, and inferential statistics, including t-tests, ANOVA, and Pearson's correlation coefficient, were applied with a significance level set at 0.05.

Results

The analysis of the data indicated that the average age of the participants was 33.75 ± 9.90 years. Of the participants, 84% were women and 16% were men. Approximately 79% of the participants were married, while 21% were single. Regarding educational background, 42% held a high school diploma, 21% had an associate degree, 36% held a bachelor's degree, and 1% had a master's degree. A significant proportion, 68%, were housewives, while 32% were employed. When asked about the sources of their health and disease-related information, 32.2% of participants initially obtained information from the internet, followed by 20.7% from training manuals and brochures, 18.4% from radio and TV, 17.6% from staff, 5.9% from newspapers, journals, and magazines, 6.1% from interactive voice responses, and 8% from friends.

The findings revealed that 25.8% of participants had adequate health literacy before the intervention, which increased to 50% after the educational program.

The average health literacy scores for participants were 79.22 prior to the educational intervention, rising to 95.49 after the intervention. A significant improvement in health literacy was observed following the educational intervention.

There was a notable improvement in the mean scores across all health-promoting behavior dimensions (responsibility, physical activity, nutrition, interpersonal relations, and stress management) after the intervention. A statistically significant difference was found for all dimensions of health-promoting behaviors before and after the intervention. The highest and lowest mean scores were observed in nutrition and physical activity, respectively.

A significant relationship was identified between health literacy and gender ($P < 0.05$). Female ambassadors had higher health literacy scores compared to male ambassadors both before and after the intervention.

In terms of health-promoting behaviors, a meaningful difference was found only in the physical activity dimension between men and women ($P < 0.05$), with men showing higher scores in both pre- and post-intervention phases. No significant differences were found for other dimensions. Additionally, a significant correlation was observed between physical activity and marital status ($P < 0.05$).

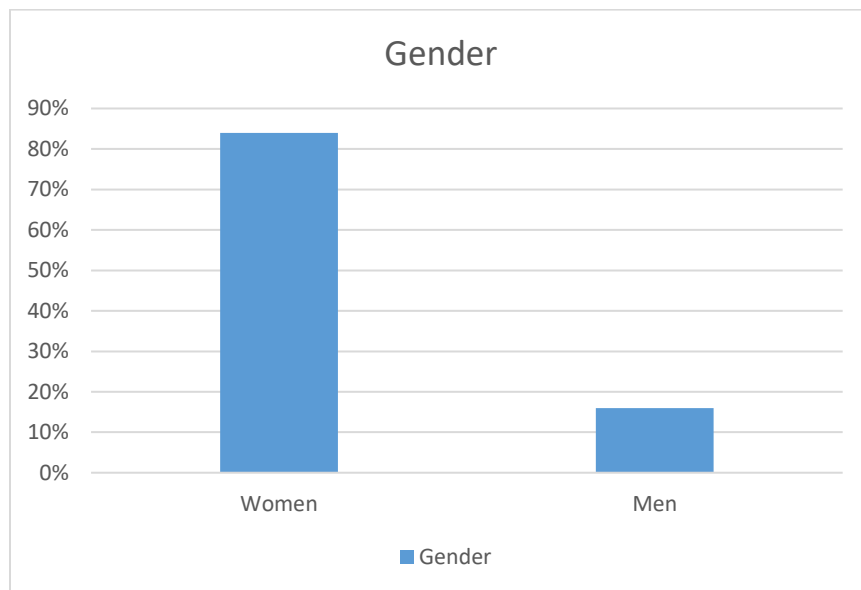
No significant relationship was found between health literacy and marital status, though single participants had higher mean scores than married participants both before and after the intervention. No other dimensions of health-promoting behaviors showed a noteworthy correlation with marital status.

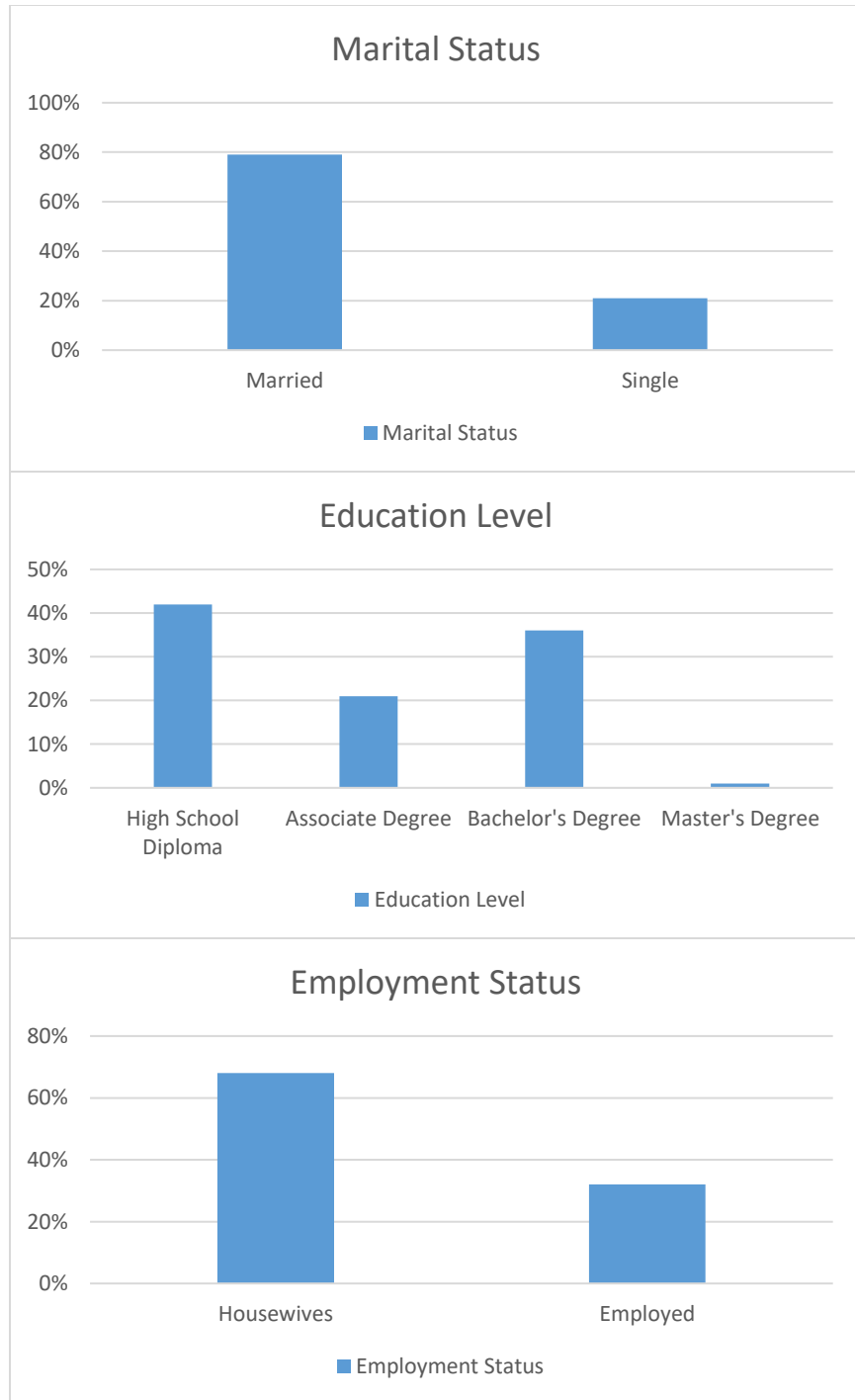
There was no significant correlation between age and health literacy or any of the other health-promoting behavior dimensions before or after the intervention. The highest mean health literacy scores both before and after the intervention were found in participants with a master's degree, followed by those with a bachelor's, associate, and diploma degrees. A significant relationship was found between health literacy and all health-promoting behavior dimensions and participants' education level ($P < 0.001$).

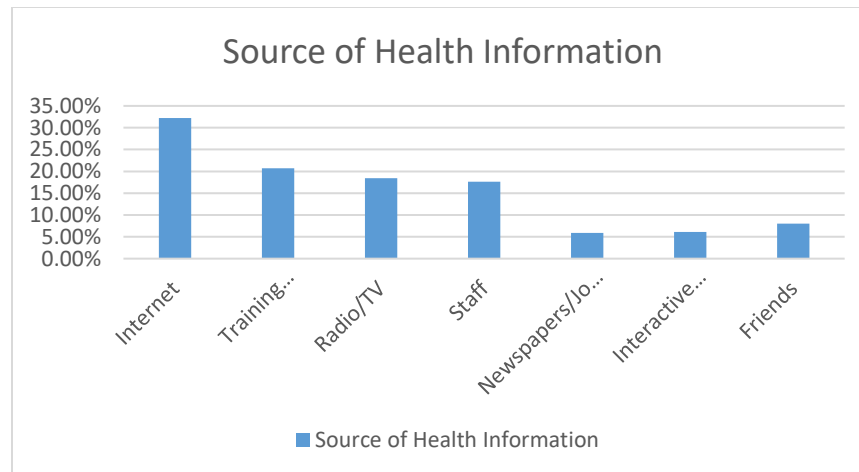
The study also demonstrated that health literacy had a direct and significant correlation with all aspects of the health-promoting behaviors questionnaire before and after the educational intervention.

Table 1: Demographic Characteristics of Participants

Characteristic	Frequency (%)
Average Age	33.75 ± 9.90 years
Gender	
Women	84%
Men	16%
Marital Status	
Married	79%
Single	21%
Education Level	
High School Diploma	42%
Associate Degree	21%
Bachelor's Degree	36%
Master's Degree	1%
Employment Status	
Housewives	68%
Employed	32%
Source of Health Information	
Internet	32.2%
Training Manuals/Brochures	20.7%
Radio/TV	18.4%
Staff	17.6%
Newspapers/Journals/Magazines	5.9%
Interactive Voice Response	6.1%
Friends	8%







Discussion

This study found that 74% of health ambassadors had insufficient or marginal health literacy, a result consistent with earlier studies by Paasche-Orlow et al. (3), Tehrani Bani Hashemi et al. (3), Javadzade et al. (12), and Tavousi et al. (13).

The study also showed a notable increase in the health literacy scores of health ambassadors after undergoing an educational intervention. This aligns with the findings of Julie et al. (14) and Kandula et al. (15), suggesting that health literacy-focused training programs can significantly enhance participants' knowledge and understanding of health-related topics.

The research further highlighted a significant gender-based difference in health literacy, with women showing higher scores than men before and after the intervention. This is supported by studies by Tehrani Bani Hashemi et al. (4) and Afshari et al. (1), who found that women typically have better health literacy. In contrast, Javadzadeh et al. (16) and Williams and Lindstrom found that women sometimes experience higher levels of inadequate health literacy, often linked to lower education levels. The higher literacy levels in women in the current study could be due to their greater interaction with healthcare settings, where they often acquire more health-related knowledge.

Interestingly, no significant correlation was found between health literacy and participants' age or marital status. This contrasts with the findings of Javadzadeh et al. (16), who reported that older individuals tended to have lower health literacy, and married individuals generally displayed higher health literacy levels.

The study also revealed a positive correlation between health literacy and education level. As educational attainment increased, so did health literacy scores. This finding is consistent with the research of Javadzadeh (12), Montazeri et al. (17), and Sentell and Halpin (18), who similarly reported that higher education is associated with better health literacy.

Regarding the sources of health-related information, this study found that the majority of participants first encountered health and disease-related information through the internet, followed by training manuals and brochures, TV and radio, and healthcare staff. These findings are similar to those reported by Tavousi et al. (13), who identified that people primarily access health information through media outlets and healthcare professionals.

In terms of health-promoting behaviors, the study observed an overall increase in scores across all six domains after the educational intervention. Nutrition saw the largest improvement, while physical activity had the lowest increase. This aligns with the results of Raiyat et al. (19), where spiritual growth showed the highest mean, and Khazaie et al. (20), where physical activity remained the lowest.

When comparing health-promoting behaviors between genders, male health ambassadors showed higher physical activity scores than females before and after the intervention. This likely reflects the greater opportunity for men to engage in physical activities, while women, often fulfilling caregiving roles, have less time for exercise. A similar pattern was noted in Lee's study on Hong Kong University students (21). However, women had higher scores than men in other areas, such as responsibility, nutrition, spiritual growth, interpersonal relationships, and stress management, although these differences were not statistically significant.

Marital status also played a role in health-promoting behaviors. Single participants had higher physical activity scores than married participants, likely due to the flexibility and time availability of single individuals. However,

married participants scored better in areas such as responsibility, nutrition, and stress management, although these differences were not significant.

Education level was also a significant factor in health-promoting behaviors, with individuals holding master's degrees scoring the highest, and those with a diploma scoring the lowest. This finding is consistent with the studies of Seyedoshohadaee et al. (23) and Sohng et al. (24), who also found a strong correlation between education level and health-promoting behaviors.

Pearson correlation analysis revealed a direct and meaningful relationship between health literacy and all dimensions of health-promoting behaviors (responsibility, physical activity, nutrition, spiritual growth, interpersonal relationships, and stress management). These results align with previous studies by Speirs et al. (25) and Aghamolaei et al. (26). However, Seyedoshohadaee et al. (23) reported that health literacy was only significantly related to adherence to diet and medication regimens.

One limitation of this study was the influence of individual differences, personality traits, and mental states of participants while responding to the questionnaires. Additionally, personal interest in the study and other educational activities, which were beyond the researcher's control, could have affected the results.

Conclusions

The findings of this study suggest that increasing the health literacy of health ambassadors can improve their health-promoting behaviors. The fact that more than half of the participants demonstrated inadequate health literacy underscores the importance of effective educational programs focusing on self-care and promoting a culture of health awareness. Ultimately, improving health literacy at the societal level can foster better health-promoting behaviors.

The study confirmed a significant link between health literacy and health-promoting behaviors, emphasizing the need for healthcare providers to offer targeted training and interventions that can help improve the overall health of society.

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