



The Relationship of Health Literacy with Hypertension Self-Efficacy and General Self-Efficacy Among Schoolteachers

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Abstract

Background: Health literacy and self-efficacy are two key factors behind a wide variety of health-related outcomes.

Objectives: This study aimed to examine the relationship of health literacy with hypertension self-efficacy and general self-efficacy.

Methods: This cross-sectional descriptive-analytical study was conducted in 2016. Study sample consisted of 202 schoolteachers who were randomly selected from elementary and secondary schools in Qaenat county, Iran. Participants provided informed consent for participation and personally completed a demographic questionnaire, the short test of functional health literacy in adults, Sherer's general self-efficacy scale, and Mularcik's hypertension self-efficacy scale. The SPSS program (V. 19.0) was employed for data analysis through running the independent-sample *t*, Chi-square, Tukey's post hoc tests, Pearson correlation analysis, and one-way analysis of variance at a significance level of less than 0.05.

Results: The means of participants' health literacy, hypertension self-efficacy, and general self-efficacy were 26.8 ± 7.5 , 47.9 ± 11.5 , and 38.1 ± 8.9 , respectively. Most participants had adequate health literacy (77.2%) and high hypertension self-efficacy (71.3%), while only 9.9% of them had high general self-efficacy. There was a significant negative relationship between general self-efficacy and educational level. Moreover, health literacy had a significant negative correlation with age ($r = -0.17$; $P = 0.013$) and significant positive correlations with hypertension self-efficacy ($r = 0.26$; $P = 0.001$) and general self-efficacy ($r = 0.15$; $P = 0.04$).

Conclusions: Health literacy has significant relationships with hypertension self-efficacy and general self-efficacy. Therefore, educational interventions can be used to improve health literacy, promote hypertension self-efficacy and general self-efficacy, and facilitate hypertension management.

Keywords: Hypertension, Health Literacy, Self-Efficacy

1. Background

Along with advances in science and technology and changes in lifestyle habits in the last two decades, many changes have occurred in health-related issues such as the leading causes of morbidity and mortality. Accordingly, non-contagious chronic and metabolic conditions have substituted for infectious and contagious diseases as the major causes of morbidity and mortality throughout the world (1). Although non-contagious diseases are mostly preventable and controllable, they are the leading cause of 40% of deaths in developing countries and 75% of deaths in industrial countries (2). Estimations show that by 2020, non-contagious diseases will be the first leading cause of disability, disease burden, and mortality (3). Mortality

studies in Iran also show significant decreases in the rate of deaths induced by contagious diseases and significant increases in the rate of deaths induced by non-contagious diseases (such as cardiovascular disease, cancers, and poisoning) in the last 23 years. These mortality shifts are attributable to factors such as improved life expectancy, increased exposure to health risk factors, and changes in lifestyle (4).

Cardiovascular diseases are the leading cause of 40% of all deaths in Iran and hence, most healthcare resources are consumed for their management (5). Hypertension is the most modifiable risk factor of cardiovascular diseases (6) and the second main risk factor of myocardial infarction. The global prevalence of hypertension is 26% of the adult

population (7). Yet, a major issue respecting hypertension management is at its low reporting rate in almost all areas of the world (7). Hypertension is usually underestimated and neglected due to the fact that it is mostly symptom-free and is mainly diagnosed after causing serious irreparable complications such as congestive heart failure, renal disorders, cerebrovascular accidents, and peripheral vascular disease. Thus, it is called the “Silent killer”. The world health day 2013 theme “healthy blood pressure” confirms hypertension seriousness and underestimation (8, 9).

Different factors such as unhealthy lifestyle, improved life expectancy, growing aging population, sociocultural changes, urbanization and its associated stressors, and growing fragility of family relationships have contributed to increases in hypertension prevalence (7, 8). The role of modifiable risk factors or unhealthy lifestyle habits in causing hypertension is more significant than nonmodifiable risk factors such as genetic susceptibility (5). Therefore, hypertension can be effectively prevented and managed through lifestyle modifications such as smoking cessation, alcohol abstinence, healthy eating, and regular physical activity (7).

Self-efficacy (SE) is a core component in effective lifestyle modification. It is defined as an individual's belief in his/her ability to successfully perform an action (10). In other words, SE is an assurance a person has in doing a given action (11). Self-efficacy theories hold that people attempt to do actions they believe they can do and avoid attempting for actions they believe they cannot (10). SE is an important prerequisite for self-management and self-care in the process of behavior modification (12). It can be improved through dividing an action into small parts and performing it for several times (13).

Health literacy (HL) is another factor, which can potentially affect success in lifestyle modification. It is defined as social and cognitive skills, which determine individual's motivation for and ability to access, understand, and use information for health maintenance and promotion. In other words, it is the capacity for acquiring, interpreting, and understanding health-related information and services and using them for making appropriate health-related decisions. HL is not only a personal characteristic, but also a key factor behind health maintenance and promotion, disease prevention, and early disease screening and diagnosis. Inadequate HL can postpone the diagnosis of health problems, undermine the self-care ability, heighten the risk for different health problems, and increase mortality rate (14).

Nonetheless, a nationwide study in the United States estimated that the prevalence of HL inadequacy was 48% and showed that only 11% of adults had adequate HL (10). A study in five provinces of Iran on 1086 adult Iranians who

aged more than 18 also showed that only 28.1% of them had adequate HL, while 15.3% had borderline HL, and 56.6% had inadequate HL. That study concluded that HL in Iran was low (15). Another study in Isfahan, Iran, revealed that 79% of elderly people had inadequate HL (16).

2. Objectives

To the best of our knowledge, there is limited evidence concerning the relationship of HL and SE. Therefore, this study was conducted to examine the relationship of HL with hypertension SE (HSE) and general self-efficacy (GSE) among schoolteachers.

3. Methods

This was a cross-sectional descriptive-analytical study. Statistical population of the study consisted of male schoolteachers who aged more than 30 and were affiliated to the Department of Education of Qaenat County, Iran. Based on the findings of an earlier study into HL (17), using the sample size calculation formula for the estimation of a proportion, and with a confidence interval of 95%, probability value of 0.29, and degree of freedom of 0.07, the sample size was calculated to be 162. However, in order to increase the study power, 202 schoolteachers were selected. Sampling was done through stratified random sampling so that all schools in Qaenat county were divided into four strata, namely junior elementary, senior elementary, junior high, and senior high schools. Then, the lists of all teachers in these schools were obtained from the Qaenat Department of Education. Then, a proportionate sample was selected from each stratum through simple random sampling. The inclusion criteria included consent for participation in the study, age of more than 30, and no university degree in medical sciences. Teachers were excluded if they incompletely answered study instruments.

3.1. Data Collection and Instruments

Data collection instruments were a demographic questionnaire, the short test of functional health literacy in adults, Sherer's GSE scale, and Mularcik's HSE scale. The demographic questionnaire included 15 items on teachers' demographic characteristics such as age, educational level, marital status, number of children, smoking status, weight, height, diastolic and systolic blood pressures, and family history of hypertension.

The short test of functional health literacy in adults (S-TOFHLA) is the short version of TOFHLA and needs comparatively shorter amount of time (7 - 10 minutes) for answering. S-TOFHLA used in the present study contained 36

multiple-choice questions. Each question had only a correct answer, which was selected from four options and was scored 1. Wrong answers were scored 0. Thus, the total score of the test was 0 - 36 (18). Teachers with S-TOFHLA scores of 0 - 16, 17 - 22, and 23 - 36 were considered to have inadequate, borderline, and adequate HL, respectively. The Persian S-TOFHLA is a valid and reliable test with a Cronbach's alpha of 0.78 (15).

Sherer's GSE Scale included 17 items, which were scored on a five-point Likert-type scale from 1 "completely disagree" to 5 "completely agree", with a total score of 17 - 85. The scores of this scale were interpreted as the following: 17 - 33, low GSE; 34 - 51, moderate GSE; and 52 - 85, high GSE. The Persian version of the scale was reported to have a Guttman split-half coefficient of 0.76 and a Cronbach's alpha of 0.79 (19).

Mularcik's HSE scale (20) included six items on factors contributing to hypertension, namely physical activity, cigarette smoking, stress, dietary regimen, daily activities, and medications. Items were scored on a ten-point Likert-type scale from 1 "completely disagree" to 10 "completely agree", resulting in a total score of 6 - 60. Scores were interpreted as follows: 6 - 32, low HSE; 33 - 44, moderate HSE; and 45 - 60, high HSE. The content validity of this scale was assessed in the present study by 10 specialists. Its test-retest stability coefficient, total Cronbach's alpha, and subscale Cronbach's alpha values in the present study were 0.99, 0.96, and 0.79 - 0.94, respectively.

For data collection, study participants were asked to personally complete the study instruments. Moreover, their right-hand blood pressures were measured using a digital sphygmomanometer (Omron Healthcare, Japan) in the sitting position. Before blood pressure measurement, they were required to urinate completely, avoid drinking coffee, smoking cigarette, do vigorous physical activity for 30 minutes, and sit in the sitting position for at least five minutes. Participants with a diastolic blood pressure of 80 - 89 mmHg or a systolic blood pressure of 120 - 139 mmHg were considered as prehypertensive (6). Height and weight were also measured based on the Center for Disease Control and Prevention standards and using a portable height scale and a digital weight scale (both made in Australia). Then, body mass index (BMI) was calculated. Participants with BMIs of 18.5 - 24.9, 25 - 29.9, and more than 30 were considered as normal, overweight, and obese, respectively (6).

Data were entered into the SPSS program (V. 19.0). The Kolmogorov-Smirnov test indicated that all study variables had normal distribution. Therefore, the independent-sample *t*, Chi-square, Tukey's post hoc tests, Pearson correlation analysis, and one-way analysis of variance were employed for data analysis at a significance level of less than

0.05.

This study was approved by the Institutional Review Board and the Ethics Committee of Mashhad University of Medical Sciences, Mashhad, Iran (with the approval codes of 950139 and IR.MUMS.REC.1395.597, respectively). Participants were provided with explanations about the study aim and then, were asked to provide consent for participation.

4. Results

This study was conducted on 202 male schoolteachers with an age mean of 42.7 ± 6.1 . Most participants held a bachelor's degree (59.4%) and were married (96.5%), while only 2% of them were smokers (Table 1). Most of them had systolic prehypertension (57.4%) and around half of them had diastolic prehypertension (48.5%). Around 38.6% of them had normal weight, while 44.6% were overweight, and 16.8% were obese. Moreover, before blood pressure measurement, 39.1% of them reported having normal blood pressure.

The means of participants' HL, HSE, and GSE were 26.8 ± 7.5 , 47.9 ± 11.5 , and 38.1 ± 8.9 , respectively. Most participants had adequate HL (77.2%) and high HSE (71.3%), while only 9.9% of them had high GSE (Table 2). The highest to lowest scored lifestyle behaviors related to hypertension were smoking cessation (8.4 ± 2.6), low sodium intake (8.2 ± 2.2), using a healthy diet (8.1 ± 2.4), daily activities (8.0 ± 2.2), stress management (7.8 ± 2.4), and physical activity (7.5 ± 2.5), respectively.

The mean score of GSE was significantly lower among participants with higher educational degrees ($P < 0.001$). However, educational level had no significant relationships with the mean scores of HL and HSE ($P > 0.05$). Moreover, the mean scores of HL, HSE, and GSE had no significant relationships with marital status, smoking status, and history of hypertension ($P > 0.05$; Table 1).

Pearson correlation analysis revealed a significant negative correlation between age and HL ($r = -0.17$; $P = 0.013$) as well as significant positive correlations between HL and HSE ($r = 0.26$; $P = 0.001$), HL and GSE ($r = 0.15$; $P = 0.04$), and HSE and GSE ($r = 0.28$; $P = 0.001$). However, none of the other correlations were statistically significant ($P < 0.05$; Table 3).

Linear regression analysis revealed that the significant predictors of HL were HSE ($P = 0.001$; Table 4) and age ($P = 0.014$; Table 5).

5. Discussion

This study aimed to examine the relationship of HL with HSE and GSE among schoolteachers. More than 77%

Table 1. Participants' HL, HSE, and GSE Based on Their Demographic Characteristics^a

Characteristics	No. (%)	HL	GSE	HSE
Educational level				
Diploma	5 (2.5)	25.8 (6.1)	46.4 (11.4)	43.4 (6.1)
Associate	19 (9.4)	25.5 (6.5)	43.3 (7)	45.6 (11.2)
Bachelor's	120 (59.4)	26.8 (7)	38.6 (8)	49.1 (10.5)
Master's	58 (28.7)	27.4 (6.3)	34.6 (9.7)	46.8 (13.8)
P value ^b		0.055	< 0.001	0.17
Marital status				
Married	195 (96.5)	26.7 (6.8)	38 (9)	47.8 (11.6)
Single	7 (3.5)	30.1 (3.8)	41.6 (7.6)	51.4 (9.6)
P value ^c		0.18	0.28	0.34
Smoking				
Yes	4 (2)	26.8 (4.6)	39 (6.2)	44 (4.5)
No	198 (98)	26.8 (6.7)	38.1 (9)	48 (11.6)
P value ^c		0.71	0.86	0.12
History of hypertension				
Yes	79 (39.1)	27.7 (5.8)	37.9 (8.3)	48.9 (9.6)
No	123 (60.9)	26.2 (7.2)	38.3 (9.3)	47.4 (12.6)
P value ^c		0.85	0.2	0.48

Abbreviations: GSE, general self-efficacy; HL, health literacy; HSE, hypertension self-efficacy.

^a Values are expressed as mean (SD) unless otherwise indicated.

^b The results of the one-way analysis of variance.

^c The results of the independent-sample *t*-test.

Table 2. The Frequency Distributions of Participants' HL, HSE, and GSE

Variables	Values		
General self-efficacy	53 (26.2)	129 (63.9)	20 (9.9)
Hypertension self-efficacy	22 (10.9)	36 (17.8)	144 (71.3)
Health literacy	23 (11.4)	23 (11.4)	156 (77.2)

Table 3. The Inter-Correlations of the Study Variables^a

Variables	GSE	HSE	HL
Age	-0.05 (0.473)	-0.05 (0.462)	-0.17 (0.013)
Number of children	0.32 (0.072)	0.09 (0.21)	0.07 (0.38)
Blood pressure	0.033 (0.6)	0.051 (0.428)	-0.095 (0.136)
BMI	0.082 (0.131)	0.08 (0.09)	0.025 (0.4)
GSE	-	0.28 (0.001)	0.152 (0.04)
HSE	0.28 (0.001)	-	0.26 (0.001)

Abbreviations: GSE, general self-efficacy; HL, health literacy; HSE, hypertension self-efficacy.

^a Values are expressed as *r* (P value).

Table 4. The Results of Regression Analysis for Predicting HL Based on HSE and GSE

Variables	β	t	P Value
Constant	22.24	6.9	0.001
GSE	-0.06	-1.11	0.27
HSE	0.14	3.47	0.001

Abbreviations: GSE, general self-efficacy; HSE, hypertension self-efficacy.

Table 5. The Results of Regression Analysis for Predicting HL Based on Demographic Characteristics

Variables	F	P Value
Age	6.11	0.014
Educational level	0.022	1
Smoking	0.188	0.665
History of hypertension	0.75	0.388

of participants had adequate HL. Similarly, some previous studies reported adequate HL among 68% of adults

in Brazil (21), 88.6% of adults in England (22), and 66.4% of chronically-ill patients in Mashhad, Iran (23). However, in contradiction with our findings, several other studies reported that the rate of adequate HL was as low as 8.8% among elderly people in Isfahan, Iran (16), 28.8% among

adults in five provinces in Iran (15), and 45.4% among pregnant women in Tehran, Iran (24). Another study in Iran showed that 75.2% of university staff had inadequate HL (25). These wide variations in the rate of adequate HL in different studies may be due to the differences among the studies respecting their samples and HL assessment tools. For instance, the high rate of adequate HL in our study can be attributed to the fact that study participants were schoolteachers who usually have access to different sources of information such as written and digital media.

Study findings also showed that only 9.9% of participants had high GSE. Similarly, an earlier study reported that this rate was as low as 2.5% among breastfeeding mothers (26). However, two studies on breastfeeding mothers and pregnant women in Iran reported that they mostly had high SE (27, 28).

We also found a significant negative correlation between HL and age so that HL was lower among older participants. Two earlier studies also reported the same finding (29). Moreover, although the educational level had no significant relationships with HL and HSE in the present study, it had a significant negative relationship with GSE. Similarly, an earlier study reported the significant relationship of GSE with educational level (27). However, this relationship was insignificant in two other studies (25, 29). This discrepancy among studies may be due to the differences in their samples, settings, and SE assessment tools (30).

The other finding of the present study was the significant positive correlation of HL with HSE, which denotes the significant effects of HL on HSE. Similarly, most previous studies reported HL as a significant predictor of self-care SE in doing self-care activities (17, 23, 28, 31, 32). However, a study in the United States reported no significant correlation between HL and cardiac patients' adherence to self-care activities (33). This incongruence can be attributed to the differences in the types of the assessed SE and the settings of the studies.

One limitation of this study was that it was conducted only on male schoolteachers and hence, findings may have limited generalizability.

5.1. Conclusions

This study shows that HL has significant relationships with GSE and HSE. Accordingly, educational interventions can be used to improve HL and thereby, promote GSE and HSE, enhance health and well-being, and prevent chronic health conditions such as hypertension. Of course, interdisciplinary collaboration among mass media, department of education, and healthcare systems is necessary for greater HL improvements.

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Footnote

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