The Relationship Between Health Literacy, Self-Efficacy, and Self-Care Behaviors in Older Adults With Hypertension in the North of Iran

Azar Darvishpour, PhD; Roya Mansour-ghanai, PhD; and Fatemeh Mansouri, MS

ABSTRACT

Background: Hypertension is the main risk factor for cardiovascular disease. Low level of health literacy is more common in people with hypertension. Evidence suggests that hypertension is preventable and can be controlled by modifying lifestyle and improving self-care behaviors. Objective: This study aimed to determine the relationship between health literacy, self-efficacy, and self-care behaviors in older adults with hypertension. Methods: The present study was a cross-sectional study conducted with 150 older adult patients with hypertension admitted to the Cardiac Care Unit (CCU) and post-CCU wards in East Guilan public hospitals in the north of Iran in 2020. Sampling was conducted using a convenience method based on inclusion criteria (age 60 years and older, high blood pressure and taking antihypertensive drugs for at least 6 months, ability to speak and communicate, having the suitable physical condition (not ill) to participate in research and answer questions, and having informed consent to participate in the study). The research instruments included a Health Literacy Questionnaire for Iranian Adults, a self-efficacy questionnaire in patients with hypertension, and a self-care behavior questionnaire for patients with hypertension. Descriptive statistics and multiple linear regression were used to analyze the data using SPSS software version 19. Key Results: The results showed that most patients had adequate health literacy with a mean score of 116.77 (standard deviation [SD] = 8.34), excellent self-efficacy with a mean score of 23.06 (SD = 1.99) and relatively desirable self-care behaviors with a mean score of 51.79 (SD = 4.37). Findings also indicated that health literacy can predict self-efficacy (beta = 0.262, p = .001) and self-care behaviors (beta = 0.639, p = .000). Conclusions: Based on results, health literacy is a predictor of self-efficacy variables and self-care behaviors. Therefore, planning to improve the health literacy of the older adult to promote self-efficacy and self-care behaviors and ultimately their health is recommended. [HLRP: Health Literacy Research and Practice. 2022;6(4):e262–e269.]

Plain Language Summary: This study sought to determine the role of health literacy in predicting self-efficacy and self-care behaviors in older adults with hypertension admitted to CCU and post-CCU wards in East Guilan public hospitals in the north of Iran. Findings of this research demonstrate health literacy can predict self-efficacy and self-care behaviors.

Aging plays an important role in the deterioration of cardiovascular function and thus increases the risk of cardiovascular disease in older adults (Rodgers et al., 2019). Hypertension is the main risk factor for cardiovascular disease and is the cause of 20-50% of deaths (Mohsenzadeh et al., 2017). The prevalence of hypertension has increased, especially in low- and middle-income countries (Mills et al., 2020). The results of research conducted in Iran show that the prevalence of hypertension in this country is increasing (Gangi et al., 2018). Older adults, age 60 years and older, accounted for 50.1% higher than the sum of other age groups (Lu et al., 2017).

Hypertension, if not properly controlled, can lead to various diseases, significant disability, reduced productivity, and ultimately a negative effect on quality of life (Ebadi et al., 2017). Evidence suggests that hypertension, despite its chronic nature, is preventable and can be controlled by modifying lifestyle and improving self-care behaviors. Self-care behaviors are a key concept in health promotion that refers to the set of decisions and activities that a person uses to adapt to health-related problems or improve health (D’Souza et al., 2017). Self-care, in addition to gaining client independence and economic savings, also reduces the effects of disease and disability, which will ultimately lead to improved health in the community (Barati et al., 2018).
One of the important components in predicting self-care behaviors is self-efficacy, which refers to people’s beliefs about their ability to do certain levels of performance and it includes the person’s confidence in being able to do self-care work properly (Bandura, 1983). With self-efficacy, the individual achieves a more desirable outcome than self-care (Behzad et al., 2016). In a study, self-efficacy was a statistically significant predictor of medication adherence in older patients with hypertension (Son & Won, 2017). It is believed that the sense of self-efficacy and related behaviors is the key to successful treatment, increased self-care behaviors, and improved quality of life (Labata et al., 2019). A key strategy for controlling blood pressure is patient self-care behavior (Zareban et al., 2022).

Self-care behaviors recommended for optimal hypertension disease control include: (1) adhering to antihypertensive medication, (2) adhering to a healthy diet low in salt, (3) engaging in adequate physical activity, (4) smoking cessation, and (5) consuming alcohol in moderation (National Institute for Health and Care Excellence, 2019).

However, several studies reported a low rate of adherence to the recommended self-care behaviors. (Lulebo et al., 2015; Zinat Motlagh, 2016). Therefore, it is important to study patients’ self-care behaviors (Hu et al., 2015).

One of the factors in accessing health-related information and thus better self-care is health literacy (Peyman et al., 2017). Health literacy is a key determinant of community health (Chehri et al., 2015) and an important predictor of health behaviors, outcomes, and self-care activities (Mohammadi et al., 2015). Low level of health literacy is more common in people with chronic conditions such as hypertension (Peyman et al., 2017).

It is important to note that low levels of health literacy are associated with most major chronic diseases such as hypertension (McNaughton et al., 2014). Health literacy, however, can be improved and is a potentially amenable determinant of health (Michou et al., 2018).

Several studies examined the levels of health literacy, self-efficacy, and self-care separately or together (Reisi et al., 2011; Rozbahani et al., 2014). The results of the study by Reisi et al. (2011) showed that the level of health literacy in this is inadequate. In the study of Rozbahani et al. (2014), older adults with hypertension had poor self-efficacy in relation to self-care behaviors. However, due to the increasing prevalence of hypertension in the Iranian population and considering that no study has been conducted to investigate the relationship between health literacy, self-efficacy, and self-care behaviors in older adults with hypertension in Guilan province, which is the oldest province in Iran, the present study was conducted. The research hypotheses were:

- There is a correlation between health literacy and self-efficacy in older adults with hypertension admitted to the CCU and post-CCU wards.
- There is a correlation between health literacy and self-care behaviors in older adults with hypertension admitted to the CCU and post-CCU wards.

METHODS
Design and Participants
This article reports part of a larger cross-sectional study that was conducted in 2020. The samples were 150 older adults with hypertension admitted to CCU and post-CCU wards in East Guilan public hospitals (affiliated to Guilan University of Medical Sciences) in northern Iran. Among

Azar Darvishpour, PhD, is an Associate Professor, Zeynab (P.B.U.H) School of Nursing and Midwifery, and an Instructor, Social Determinants of Health Research Center. Raya Mansour-ghanaei, PhD, is an Assistant Professor of Health Sciences, Gastrointestinal and Liver Diseases Research Center. Fatemeh Mansouri, MS, is a Tutor, Zeynab (P.B.U.H) School of Nursing and Midwifery. All contributors are affiliated with Guilan University of Medical Sciences.

Address correspondence to Azar Darvishpour, PhD, Zeynab (P.B.U.H) School of Nursing and Midwifery, Marty Yaghoub Sheikh St, Leyla kooch, Langeroud, Guilan, Iran 44771-66595; email: darvishpour_a@yahoo.com.

© 2022 Darvishpour, Mansour-ghanaei, Darvishpour; licensee SLACK Incorporated. This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International (https://creativecommons.org/licenses/by-nc/4.0). This license allows users to copy and distribute, to remix, transform, and build upon the article non-commercially, provided the author is attributed and the new work is non-commercial.

Grant: This project was funded by the Research and Technology Deputy of Guilan University of Medical Sciences (ethics ID IR.GUMS.REC.1398.367).

Disclosure: The authors have no relevant financial relationships to disclose.

Acknowledgment: The authors thank the Research Deputy of Guilan University of Medical Sciences for their financial support, and all the patients who participated in this study.

Received: July 28, 2021; Accepted: April 25, 2022
doi:10.3928/24748307-20221013-01
six hospitals, three hospitals were selected randomly. Sampling was conducted by convenience method based on inclusion criteria. Inclusion criteria were age 60 years and older, high blood pressure (systolic blood pressure of 140 mm Hg or more, or a diastolic blood pressure of 90 mm Hg or more) and taking antihypertensive drugs for at least 6 months (according to the patient’s statement), ability to speak and communicate (to answer the questions of the questionnaires), having the suitable physical condition (not ill) to participate in research and answer questions, and having informed consent to participate in the study.

Exclusion criteria included having mental or cognitive disorders, memory impairment and mental instability, having hearing and vision disorders, unwillingness to continue participating in the study, and death of the participant in the research process.

The sample size, according to Chen et al. (2013), considering a 95% confidence interval and power of 90%, was calculated as 73 people. Also, based on the conservative ratio of Halinski and Feldt (1970) to determine the sample size based on at least 10 observations per independent variable in regression analysis (Bartlett et al., 2001), according to the 13 variables in the present study, the sample size was calculated as 130 people and considering the possibility of missing samples, 150 people were finally sampled.

**Instruments and Data Collection**

The instruments used in the present study were the Health Literacy Questionnaire for Iranian Adults (HELIA) (Montazeri et al., 2014), the self-efficacy questionnaire in patients with hypertension (Mirzaei Alavijeh et al., 2012), and the self-care behavior questionnaire for patients with hypertension (Mirzaei Alavijeh et al., 2012), which are described below.

**HELIA.** HELIA consists of 33 items that are designed in 5 domains, including reading (4 questions), access (6 questions), comprehension (7 questions), assessment, (4 questions), decision-making and behavior (12 questions). Questions were answered based on the five degrees of the Likert scale (always, most of the time, sometimes, rarely, not at all). Each item was assigned by 1 to 5 scores. The range of scores in this tool is 33 to 165. Then the scores are converted into percentages and finally the ranking of health literacy level will be calculated. In such a way that the level of health literacy in the range of 84.1% to 100% indicates excellent health literacy; health literacy level in the range of 66.1% to 84% indicates adequate health literacy; health literacy level in the range of 50.1% to 66% indicates relatively adequate health literacy; and the level of health literacy in the range of 0% to 50% indicates inadequate health literacy (Afshari et al., 2017). Psychometric properties of this questionnaire in Iran were assessed by Montazeri et al. (2014) and the reliability of the instrument was calculated by Cronbach’s alpha (0.80).

The self-efficacy questionnaire in patients with hypertension. The Seventh Report of the Joint National Committee recommends six of the items (limiting sodium, weight loss, increasing exercise, consuming a diet high in fruits and vegetables, abstaining from alcohol or consuming alcohol in moderation, and medication compliance) to improve blood pressure rates. To determine self-efficacy levels, the participants rated themselves on a five-point scale (Mularcik, 2010). It should be noted that the subscale of alcohol consumption was eliminated in Iranian society. A higher score indicates higher self-efficacy (Mirzaei Alavijeh et al., 2012).

In Najimi et al’s study (2017), the mean questionnaire content validity was 0.85 and the reliability for the entire instrument was 0.84. The reliability of this questionnaire in the present study was evaluated using Cronbach’s alpha, which was 0.74 (Najimi et al., 2017).

Self-care behaviors questionnaire for patients with hypertension. This questionnaire was designed by Han et al. (2014) on three scales (behavior, motivation, and self-efficacy). Each scale consists of 20 items and the answers with four options from always to never. A higher score indicates more desirable self-care. In this study, the behavior scale of this questionnaire was used, which covers the areas of physical activity, diet and medication, alcohol and smoking restriction, blood pressure self-monitoring, stress management, and regular visits by the treating physician (Barati et al., 2018). The reliability of this questionnaire in the present study was calculated using Cronbach’s alpha, which was 0.75.

To data collection, the third researcher (F.M.) went to the selected hospitals on weekdays and selected the patients who met the inclusion criteria. After introducing herself and explaining the objectives of the research to participants and obtaining written informed consent, she read the items of the questionnaire to the clients and marked the answer in the relevant section. It took about 25 to 30 minutes to complete the questionnaires. Sampling lasted a total of 3 months.

**Ethical Considerations**

This study is the result of a research project with code number IR.GUMS.REC.1398.367 approved by the Ethics Committee of Guilan University of Medical Sciences, Rasht, Iran. Participants were informed of the study purpose and then informed consent were obtained from them.

**Data Analysis**

Descriptive statistics and multiple linear regression were used to analyze the data using SPSS software version 19. With descriptive statistics, the data were presented as percentage or mean and ±SD. Multiple linear regression were performed to
determine the role of health literacy in predicting self-efficacy and self-care behaviors of older adults with hypertension. In addition to independent and dependent variables, demographic variables that were related to those variables (such as age, gender, level of education) were entered into the regression model as confounders to control their influence. None of the confounding variables had a significant effect on the relationship between independent and dependent variables and the results were reported as long as the other variables were constant. All calculations were performed at a significant level of $p < .05$.

RESULTS

Findings related to demographic characteristics showed that many of the participants (53.3%) were in the age group of young older adults (60-74 years) and the majority (68.8%) were married women (89.3%), and had primary education (53.3%). In terms of economic status, the majority (48%) had insignificant income (Table 1).

Findings of the study showed that the majority of the older adults with hypertension had adequate health literacy with a mean score of 116.77 ($SD = 8.34$), excellent self-efficacy with a mean score of 23.06 ($SD = 1.99$), and relatively desirable self-care behaviors with a mean score of 51.79 ($SD = 4.37$) (Table 2).

TABLE 1
Sociodemographic Characteristics of Patients and Their Means of Health Literacy, Self-Efficacy, and Self-Care Behaviors ($N = 150$)

| Variable                          | Number (%) | Health Literacy | Self-Care Behaviors | Self-Efficacy |
|-----------------------------------|------------|-----------------|---------------------|---------------|
|                                  |            | M (SD)          | M (SD)              | M (SD)        |
| Age (years)                      |            |                 |                     |               |
| 60-74                            | 80 (53.3)  | 111.20 (12.71)  | 52.20 (4.47)        | 22.40 (2.90)  |
| 75-90                            | 70 (46.7)  | 107.22 (9.64)   | 48.89 (7.36)        | 22.00 (3.51)  |
| Sex                              |            |                 |                     |               |
| Female                           | 102 (68.8) | 110.62 (8.70)   | 50.46 (6.86)        | 22.23 (3.24)  |
| Male                             | 48 (31.2)  | 106.50 (15.75)  | 51.00 (4.56)        | 22.17 (3.14)  |
| Education                        |            |                 |                     |               |
| Illiterate                       | 36 (24.0)  | 100.75 (6.50)   | 47.75 (10.50)       | 20.50 (5.00)  |
| Primary                          | 80 (53.3)  | 107.94 (7.34)   | 51.22 (6.19)        | 22.67 (3.29)  |
| Junior high school               | 26 (17.3)  | 109.80 (10.43)  | 49.78 (6.13)        | 21.68 (2.91)  |
| High school and higher           | 8 (5.3)    | 112.31 (18.26)  | 53.38 (4.38)        | 23.77 (3.00)  |
| Occupation                       |            |                 |                     |               |
| Officials                        | 8 (5.3)    | 110.50 (18.70)  | 52.00 (6.41)        | 21.50 (5.3)   |
| Agriculture                      | 16 (10.7)  | 94.00 (.00)     | 46.00 (.00)         | 25.00 (.00)   |
| Retired                          | 32 (21.3)  | 107.50 (2.78)   | 53.50 (1.54)        | 21.25 (3.13)  |
| Other occupations                | 94 (62.7)  | 111.00 (11.44)  | 49.83 (6.99)        | 22.42 (3.46)  |
| Martial status                   |            |                 |                     |               |
| Married                          | 134 (89.3) | 109.47 (12.10)  | 50.35 (6.50)        | 22.00 (3.29)  |
| Widow                            | 16 (10.7)  | 108.00 (2.13)   | 53.00 (1.06)        | 24.00 (1.06)  |
| Economic status$^b$              |            |                 |                     |               |
| Insignificant income             | 72 (48.0)  | 106.33 (10.27)  | 49.56 (7.36)        | 22.00 (3.88)  |
| Moderate income                  | 62 (41.3)  | 106.88 (6.18)   | 49.88 (3.74)        | 22.13 (2.56)  |
| Adequate income                  | 16 (10.7)  | 132.50 (4.81)   | 58.50 (.53)         | 23.50 (1.60)  |
| Smoking                          |            |                 |                     |               |
| Yes                              | 32 (21.3)  | 103.75 (10.61)  | 49.25 (2.23)        | 21.00 (2.92)  |
| No                               | 118 (78.7) | 110.80 (11.30)  | 51.00 (6.85)        | 22.53 (3.20)  |
| Duration of hypertension (years) |            |                 |                     |               |
| 1-5                              | 80 (53.3)  | 107.40 (11.74)  | 49.30 (7.13)        | 21.20 (3.35)  |
| 6-10                             | 30 (20.0)  | 110.75 (4.75)   | 50.75 (4.75)        | 21.25 (2.76)  |
| >10                              | 40 (26.7)  | 112.00 (14.17)  | 53.20 (4.37)        | 25.00 (.00)   |
| Sources of health information    |            |                 |                     |               |
| Medical staff                     | 142 (94.7) | 110.22 (11.09)  | 11.09 (50.89)       | 22.28 (3.26)  |
| Newspapers, magazines, and books | 8 (5.3)    | 93.00 (.00)     | .00 (46.00)         | 21.00 (.00)   |
| History of the background disease|            |                 |                     |               |
| Yes                              | 104 (69.3) | 108.38 (11.65)  | 50.85 (6.73)        | 22.54 (3.44)  |
| No                               | 46 (30.7)  | 111.33 (10.99)  | 50.17 (4.98)        | 21.50 (2.48)  |

$^a$World Health Organization distinguishes three stages of old age: "young old" (60-74 years), "old-old" (75-84 years old), and "oldest-old" (85 years and older). $^b$It means the status of monthly income, which is self-reported by the samples.
indicated that health literacy has the potential to predict self-efficacy (beta = 0.262, \( p = .001 \)) and self-care behaviors (beta = 0.639, \( p = .000 \)). Health literacy only contributed to 6.2% (\( \Delta R^2 = .062 \)) of the variance in self-efficacy and 40% (\( \Delta R^2 = .404 \)) of the variance in self-care (Table 3).

**DISCUSSION**

This study aimed to determine the relationship between health literacy, self-efficacy, and self-care behaviors in the older adults with hypertension. The findings of this study indicated that health literacy can predict self-efficacy and self-care behaviors. In other words, people with higher health literacy can have better self-efficacy and self-care behaviors.

In line with the results of the present study, Masoompour et al. (2017) examined the relationship between health literacy, self-efficacy, and self-care behaviors in patients with diabetes and showed that there is a significant relationship between health literacy and self-efficacy, health literacy and self-care behaviors, and between self-efficacy and self-care behaviors. The results of Khodabandeh et al. (2017) study also showed that health literacy and self-efficacy can predict self-care performance in students.

In general, health literacy has been introduced as a moderating source for the challenges associated with self-management of chronic diseases (Hahn et al., 2015). Health literacy is directly and indirectly related to self-efficacy and self-care in patients with heart failure (O'Neil et al., 2013). Health literacy also has a direct and indirect effect on self-care activities through self-efficacy (Lee et al., 2016).

In contrast, in the study of Peyman et al. (2017), self-care behaviors were not associated with health literacy and no statistically significant relationship was found between health literacy and self-care behaviors. The reason for this discrepancy can be due to the different tools for measuring health literacy and self-care behaviors and different populations of study. Although the Peyman et al. (2017) study dealt with the relationship between self-care behaviors and health literacy in patients with hypertension, the present study was performed on older adult patients with hypertension admitted to CCU and post-CCU wards. Differences in research location, research community, and type of questionnaires are influential factors.

The result of a study on health literacy and self-care performance has shown that low levels of health literacy have significant effects on patients’ behavior and have unpleasant consequences (Khodabandeh et al., 2017). The result of this study indicates that patients with inadequate health literacy have poorer health status, more hospitalization rates, and the mortality rate is almost twice as high as other people. These patients are less likely to receive preventive care and generally do not receive the same health care as other people (Khodabandeh et al., 2017). Therefore, it can be said that today the issue of health literacy in older adults is of special importance; in particular, older adults are less likely than other age groups to have access to health information through electronic communication networks. However, people with high levels of health literacy benefit more from health outcomes than people with limited health literacy (Khodabandeh et al., 2017). Thus, empowering the older adults in the field of health literacy is an important factor in promoting self-efficacy and self-care behaviors and ultimately the health of these people.

Self-care education helps patients improve health care programs and reduce recurrences and frequent visits to treatment centers (Mohaddes Ardebeli et al., 2017).

On the other hand, high self-efficacy was associated with better self-care behavior (Tharek et al., 2018) and people with

### TABLE 2

| Variable                                      | Number (%) | M (SD) | Minimum | Maximum |
|-----------------------------------------------|------------|--------|---------|---------|
| Health literacy                               |            |        |         |         |
| Adequate health literacy (score range 109-138) | 86 (57.3)  | 116.77 (8.34) | 109     | 137     |
| Relatively adequate health literacy (score range 82-108) | 64 (42.7)  | 99.13 (6.05) | 91      | 106     |
| Self-efficacy                                 |            |        |         |         |
| Excellent self-efficacy (score range 19-25)   | 134 (89.3) | 23.06 (1.99) | 19      | 25      |
| Good self-efficacy (score range 13-18)        | 16 (10.7)  | 15.00 (2.06) | 13      | 17      |
| Self-care behaviors                           |            |        |         |         |
| Relatively desirable self-care behaviors (score range 41-60) | 142 (94.7) | 51.79 (4.37) | 43      | 59      |
| Undesirable self-care behaviors (score range 20-40) | 8 (5.3)    | 32.00 (0.00) | 32      | 32      |
higher levels of self-efficacy actively participate in self-care programs and are more successful in controlling their disease (Rayyani et al., 2014). Evidence shows that people who lack self-efficacy in treatment decisions are less successful with self-care (Chen et al., 2013). Self-efficacy is an important and basic precondition for self-care behaviors (Khezerloo et al., 2012). Higher self-efficacy was correlated with better self-care behavior (Tharek et al., 2018). In addition, people with higher self-efficacy and health literacy have a stronger motivation to engage in self-care behaviors (Masoompour et al., 2017).

The teaching methods used for older adults should be simple, varied, and specific according to their age, sex, occupation, and education. In addition, holding training sessions for family members and providing individual and family counseling services is important for promoting health literacy and self-care strategies and creating a sense of self-efficacy (Masoompour et al., 2017).

The use of alternative methods in education such as audio-visual equipment could be useful. Future research should focus on the effectiveness of nursing interventions on health literacy, self-efficacy, and especially self-care behaviors. It is also suggested that future studies investigate the relationship between health literacy, self-efficacy, and self-care behaviors in older adult patients with various diseases.

**STUDY LIMITATIONS**

One of the limitations of this study that should be considered in interpreting the results was the study population, which was limited to older adults and cannot be generalized to other age groups. The convenience sampling is another limitation of this study. Also, this study examined the health literacy and self-care of older adults with hypertension admitted to CCU and post-CCU wards; therefore, its results cannot be generalized to the health literacy and self-care of older adults in general or older adults with other diseases in other wards and places. So, it is suggested that in separate studies, the health literacy and self-care of older adults with other diseases be conducted in other wards and places and their results be compared with each other.

**CONCLUSION**

Analysis of the results of the present study showed that health literacy is a predictor of self-efficacy and self-care behaviors in older adults with hypertension. This indicates the need to pay attention to the issue of health literacy and efforts to improve the level of health literacy in this age group. Research in health and public health is needed to determine interventions that improve self-efficacy and self-care behaviors for people with low health literacy.

**REFERENCES**

Afshari, M., Teymori, G. H., Afshari, M., Kohnavard, B., Esmailpour, H., & Kangavari, M. (2017). Workers’ health literacy in Khodro’s piece making factory: A cross-sectional study. Salamat-i Kar-i Iran, 14(2), 147–155.

Bandura, A. (1983). Self-efficacy determinants of anticipated fears and calamities. *Journal of Personality and Social Psychology, 45*(2), 464–469. https://doi.org/10.1037/0022-3514.45.2.464

Barati, F., Sajjadi, M., Farhadi, A., Amiri, M., & Sadeghaghadom, L. (2018). Self-care behavior and related factors in older adults with hypertension in Ahvaz City. *Journal of Gerontology, 3*(2), 56–62. http://joge.ir/article-1-241-en.html

Bartlett, J. E., Kotrlik, J. W., & Higgins, C. G. (2001). Organizational research: Determining appropriate sample size in survey research. *Information Technology, Learning and Performance Journal, 19*, 43–50.

Behzad, Y., Bastani, F., & Haghani, H. (2016). Effect of empowerment program with the telephone follow-up (Tele-Nursing) on self-efficacy in self-care behaviors in hypertensive older adults. *Nursing...* 

**TABLE 3**

| Predictor Variable                  | $R^2$ | $\Delta R^2$ | $B$ | $SE$ | $Beta$ | $t$  | Significance Level | 95% Confidence Interval for $B$ |
|-------------------------------------|------|--------------|-----|------|--------|-----|-------------------|-------------------------------|
| Health literacy                     | .069 | .062         | .073| .022 | .262   | 3.305| .001**            | .029 – .117                   |
| Self-efficacy                       | .048 | .040         | .343| .034 | .639   | 10.102| .000**            | .276 – .410                   |
| Self-care behavior                  | .062 | .044         | .036| .028 | .252   | 3.305| .001**            | .029 – .117                   |

Note: $\Delta R^2$ = adjusted $R$ square; $SE$ = standard error. Significant difference of values is indicated by **$p < .001$.
Lee, E. H., Lee, Y. W., & Moon, S. H. (2016). A structural equation model related quality of life in patients with type 2 diabetes. *Applied Nursing Research, 36*, 25–32. https://doi.org/10.1016/j.apnr.2017.05.004

Mills, K. T., Stefanescu, A., & He, I. (2020). The global epidemiology of hypertension. *Nature Reviews. Nephrology, 16*(4), 223–237. https://doi.org/10.1038/s41581-019-0244-2

Mohaddes Ardebili, F., Najafi Ghezeljeh, T., Bozorgnejad, M., Zarei, M., Ghorbani, H., & Manafi, F. (2017). Effect of Multimedia Self-Care Education on Quality of Life in Burn Patients. *World Journal of Plastic Surgery, 6*(3), 198–203. https://doi.org/10.1038/jhj.2014.58 PMID:25080000

Khodabandeh, M., Maleki Avarasin, S., & Nikniaz, L. (2017). The relationship between health literacy, perceived self-efficacy and self-care performance of female senior high school students in health promoting schools of Miyaneh, 2016-2017. *Journal of Health Literacy and Midwifery, 10*, 369–375.

Khodabandeh, M., Maleki Avarasin, S., & Nikniaz, L. (2017). The relationship between health literacy, perceived self-efficacy and self-care performance of female senior high school students in health promoting schools of Miyaneh, 2016-2017. *Journal of Health Literacy and Midwifery, 10*, 369–375.

Khodabandeh, M., Maleki Avarasin, S., & Nikniaz, L. (2017). The relationship between health literacy, perceived self-efficacy and self-care performance of female senior high school students in health promoting schools of Miyaneh, 2016-2017. *Journal of Health Literacy and Midwifery, 10*, 369–375.

Khodabandeh, M., Maleki Avarasin, S., & Nikniaz, L. (2017). The relationship between health literacy, perceived self-efficacy and self-care performance of female senior high school students in health promoting schools of Miyaneh, 2016-2017. *Journal of Health Literacy and Midwifery, 10*, 369–375.
Hafezi, M. (2012). Self-efficacy of health promotion behaviors in hypertensive patients. [Persian]. *Scientific-Research Journal of Shahr University, 19*(98), 1–9.

Najimi, A., Mostafavi, F., Sharifirad, G., & Golshiri, P. (2017). Development and study of self-efficacy scale in medication adherence among Iranian patients with hypertension. *Journal of Education and Health Promotion, 6*, 83. https://doi.org/10.4103/jehp.jehp_64_16 PMID:29114551

O’Neil, A., Berk, M., Davis, J., & Stafford, L. (2013). Cardiac-self efficacy predicts adverse outcomes in coronary artery disease (CAD) patients. *Health (Irvine, Calif.), 5*, 6–14. https://doi.org/10.4236/health.2013.57A3002

Peyman, T. S., Pirzadeh, A., Hasznadeh, A., & Mostafavi, F. (2017). The relationship of self-care behaviors and health literacy in patients with hypertension in Isfahan City, Iran, in 2015-2016. *Journal of Health System Research, 13*(3), 381–387. http://hsr.mui.ac.ir/article-1-949-en.html

Rayyani, M., Malekyan, L., Forouzi, M. A., & Razban, A. H. F. (2014). Self-care self-efficacy and quality of life among patients receiving hemodialysis in South-East of Iran. *Asian Journal of Nursing Education and Research, 4*(2), 165–171.

Reisi, M., Mostafavi, F., Hasanzadeh, A., & Sharifirad, G. (2011). The Relationship between Health Literacy, Health status and Healthy behaviors among Elderly in Isfahan. *Journal of Health System Research, 7*(4), 469–470.

Rozbahani, N., Khorsandi, M., & Fekrizadeh, Z. (2014). Self-efficacy of self-care behaviors of elderly patients with hypertension. *Journal of Sabzevar University of Medical Sciences, 21*(5), 753–760.

Son, Y. J., & Won, M. H. (2017). Depression and medication adherence among older Korean patients with hypertension: Mediating role of self-efficacy. *International journal of nursing practice, 23*(3), https://doi.org/10.1111/ijn.12525

Tharek, Z., Ramli, A. S., Whitford, D. L., Ismail, Z., Mohd Zulkifli, M., Ahmad Sharoni, S. K., Shafie, A. A., & Jayaraman, T. (2018). Relationship between self-efficacy, self-care behaviour and glycaemic control among patients with type 2 diabetes mellitus in the Malaysian primary care setting. *BMC Family Practice, 19*(1), 39. https://doi.org/10.1186/s12875-018-0725-6 PMID:29523075

Zareban, I., Araban, M., Rohani, M. R., Karimy, M., Zamani-Alavijeh, F., Babanejad, M., & Stein, I. A. R. (2022). High blood pressure self-care among hypertensive patients in Iran: A theory-driven study. *Journal of Human Hypertension, 36*, 445–452. Advance online publication. https://doi.org/10.1038/s41371-020-00429-9 PMID:33077805

Zinat Motlagh, S. F., Chaman, R., Sadeghi, E., & Eslami, A. A. (2016). Self-care behaviors and related factors in hypertensive patients. *Iranian Red Crescent Medical Journal, 18*(6), e35805. https://doi.org/10.5812/ircmj.35805 PMID:27621938