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Relationship Between Health Literacy and Quality of Life in Patients with Hypertension

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ABSTRACT

Aims Given the increasing prevalence of hypertension and its adverse effects on the quality of life of individuals, and considering the role of health literacy in promoting personal responsibility for maintaining health, this study aimed to determine the relationship between health literacy and quality of life among patients with high blood pressure.

Instrument & Methods In this cross-sectional descriptive-analytical study, 200 patients with hypertension referred to health centers in Qaen in 2024 were selected through one-stage cluster sampling. Data collection tools included demographic and background characteristics questionnaire, the short version of the Health Literacy Adult Questionnaire, and the Health-Related Quality of Life Questionnaire. Data were analyzed using SPSS software version 23 employing logistic regression analysis.

Findings The mean scores for quality of life and health literacy were 24.589±3.587 (out of 48) and 55.370±3.147 (out of 100), respectively, and both were at unfavorable levels. Education level, amount of physical activity per week, and health literacy were associated with having a favorable quality of life.

Conclusion Quality of life is lower among illiterate hypertensive patients, those with lower levels of physical activity, and those with insufficient health literacy.

Keywords Health Literacy; Quality of Life; High Blood Pressure

CITATION LINKS

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Introduction

Chronic diseases cause 60% of deaths worldwide. Hypertension is one of these chronic diseases, known as a silent killer that often has no symptoms, and it is considered a global problem [1]. According to the Seventh Report of the Joint National Committee, hypertension is defined as a systolic blood pressure of less than 140mmHg or a diastolic blood pressure of less than 90mmHg [2]. Hypertension is a major risk factor for cardiovascular disease, ischemic stroke, hemorrhagic stroke, and chronic kidney disease [3].

Research by the Global Poverty Study Group showed that hypertension is the most important factor among 67 risk factors, and is the leading cause of death (4.9 million people worldwide) compared to other risk factors, and is responsible for about 7% of disability-adjusted life years (DALYs) and more than half of deaths from ischemic heart disease [4]. The prevalence of hypertension in Iran, similar to many countries around the world, is increasing due to rapid social changes such as urbanization, changes in lifestyle, and the increase in life expectancy of patients due to advances in medical knowledge [5]. According to statistics, about 7.5 million deaths, or 12.8% of all annual deaths worldwide, occur due to hypertension [6]. This is expected to increase to 1.56 billion due to hypertension by 2025. In Iran, the number of adults with hypertension has increased from 1.8 million (882,000 in women) in 1990 to 13.6 million (2.7 million in women) in 2016 [7], and by 2021, we have witnessed an upward trend in the prevalence of hypertension in rural and urban areas [8].

Chronic hypertension requires specific self-care behaviors, including adherence to treatment, a low-salt diet, regular physical activity, weight management, regular blood pressure measurement, avoiding smoking, and lifelong alcohol abstinence [9]. One of the factors in accessing health-related information and awareness of health issues, and consequently better self-care, is health literacy [10]. Health literacy can be defined as the ability to access, understand, evaluate, and communicate information to promote, maintain, and improve health in various areas of life [11].

An acceptable level of health literacy enables people to interpret and analyze health-related issues appropriately and to better protect themselves and those around them from pathogens [12]. People with low levels of health literacy tend to have poorer health and a higher prevalence of chronic diseases. In addition, they tend to use preventive and screening services less and incur higher medical costs [13]. According to Kim *et al*., patients with hypertension are at greater risk of adverse effects associated with low health literacy [14]. In the study by Dehvan *et al.*, the health literacy of patients with hypertension is at an average level [15]. In the study by Vazifeh *et al.*, 49.5% of patients with hypertension have inadequate and not very adequate health literacy [16]. Also, according to Radhi & Balat, 67.8% of patients with hypertension suffer from a low level of health literacy [17].

Health literacy affects health-related quality of life [18-20]. The World Health Organization defines quality of life as an individual's perception of their position in life within the context of the culture and value systems in which they live, and regarding their goals, expectations, standards, and concerns [21]. Limited studies have been conducted on the level of quality of life among patients with hypertension. Middle-aged people with high blood pressure have lower quality of life scores [22]. In Masror Roudsari *et al.*'s study, the average quality of life among people with high blood pressure is 54.64%, accounting for almost half of the quality of life score [23].

Also, Arvin *et al.* found that high blood pressure reduces quality of life in the physical, psychological, and social domains [24].

Some studies have shown that low health literacy is associated with poor quality of life, which may be due to reduced access to medical care, increased stress from daily life challenges, poor self-management of the disease, and reduced self-efficacy, i.e., the ability to exert control over one's life and environment [19, 25]. Considering the increasing prevalence of hypertension in Iran [5], the adverse effects of this disease on the quality of life of individuals, and the role of health literacy in promoting personal responsibility for maintaining one's health [26], and given the contradictory results of studies conducted on estimating the level of health literacy [15-17] and quality of life among these patients [22-24], the present study aimed to determine the relationship between health literacy and quality of life among patients with hypertension.

Instrument and Methods

This cross-sectional descriptive-analytical study was conducted among 200 patients with hypertension referred to health centers in Qaen in 2024. Sampling used a one-stage cluster approach. First, a list of all health treatment centers in Qaen was prepared and then, from these centers, four centers were randomly selected, and all patients referring to the selected centers were included in the study.

Inclusion criteria were having a health record in health service centers, having hypertension, willingness to cooperate, ages 30 to 65 years, and Iranian nationality. Exclusion criteria included refusal to continue participation and incomplete questionnaires.

To estimate the sample size, based on a pilot study among 30 patients and assuming r=0.15 for the correlation between health literacy and quality of life, and using the sample size table for correlational studies, the minimum required sample size was estimated to be 175 participants [27]. Then, with a

design effect of 1.1, the sample size was estimated to be 192 participants. Finally, accounting for an expected 5% dropout rate, 200 participants were enrolled in the study.

We used a questionnaire with three parts. The first part was a checklist of demographic and contextual parameters that included items about age, gender, education level, spouse's education, employment status, marital status, economic status, family history of hypertension, duration of hypertension, being under medical supervision, history of other diseases, nutritional status, body mass index, and weekly physical activity.

The second part was the short version of the Health Literacy for Adults-Short Form (HELIA-SF) Questionnaire to measure health literacy. The HELIA-SF consists of 9 items and two domains of basic skills and decision-making skills. This version is suitable for measuring health literacy levels in different urban and rural population groups due to its short and concise nature and, as a result, its faster completion than the original version.

The short version of the HELIA-SF is a reliable and valid instrument, and Cronbach's alpha and ICC coefficients were found to be acceptable for each of the two dimensions (0.84 and 0.81 for basic skills; 0.85 and 0.82 for decision-making skills) and for all items (0.91 and 0.81, respectively). The content validity of the questionnaire items was also found to be qualitatively satisfactory [28].

Before the study began, the reliability of this questionnaire was again assessed using Cronbach's alpha coefficient among 30 patients during a pilot study. The Cronbach's alpha coefficient of this instrument was 0.86, indicating good internal consistency.

To measure health-related quality of life, the 12-item Quality of Life Questionnaire (SF-12), which is a shortened form of the SF-36, was used. This questionnaire is widely used in various studies [29]. Montazeri *et al.* in 2009 examined the validity and reliability of this questionnaire in Iran. The reliability of the 12 items of the physical and mental components was reported to be 0.73 and 0.72, respectively.

This questionnaire has eight subscales, including general health perception, physical performance, physical health, physical pain, emotional problems, social performance, vitality and energy, and mental health, of which the first four subscales constitute the physical component and the second four subscales constitute the mental component of quality of life. The scoring method is as follows: If the scores obtained are 12-24, the overall quality of life is considered poor, if they are 25-36, the overall quality of life is considered moderate, and if they are 37-48, the overall quality of life is considered good [30].

This study was approved by the Vice-Chancellor for Research and Technology of Birjand University of Medical Sciences (ethics code IR.BUMS.REC.1403.172).

The purpose of the study was also explained to the participants, and their written consent was obtained. In addition, the questionnaires were completed in a self-administered manner, with all patients asked to answer the questions with complete honesty. They were also assured that all information requested in the questionnaire would be kept confidential.

The data were then entered into SPSS version 23 and analyzed using descriptive statistics and a logistic regression analysis. The significance level was set at $p<0.05$.

Findings

Two hundred patients were studied (response rate: 100%). Among them, 68.5% (137) of the sample were female, 85% (170) were married, and 60% (120) were urban residents.

The mean age of the participating patients was 258.410±3.547 years. The mean quality of life score was 589.240±3.587 out of 48, which was at an unfavorable level. The mean health literacy score was 37.550±3.147 out of 100, which was at an unfavorable level. Also, 28.5% (57 cases) had insufficient health literacy, 36.5% (73 cases) had not very sufficient health literacy, 22.5% (45 cases) had sufficient health literacy, and 12.5% (25 cases) had excellent health literacy.

Education level, weekly physical activity, and health literacy were among the factors affecting having a desirable quality of life. The odds of having a desirable quality of life among patients with "high school diploma or bachelor's degree" and "master's degree and higher" were 1.129 and 2.211 times higher than those of illiterate patients, respectively. Also, the odds of having a desirable quality of life among patients with physical activity "most days" and "some days" were 0.175 and 0.115 times higher than those of patients with physical activity "daily," respectively.

The odds of having a desirable quality of life among patients with insufficient, sufficient, and excellent health literacy were 1.125, 2.101, and 3.145 times higher than that of patients with insufficient health literacy, respectively. Meanwhile, other demographic and contextual parameters had no effect on having a desirable quality of life ($p<0.05$; Table 1).

Table 1. Frequency of the research parameters and the results of logistic regression to determine the factors affecting the quality of life among the patients

Parameter	Frequency (%)	Odds (CI 95%)	p-Value
Age	-	1.211 (0.147-1.589)	0.569
Gender			
Female	137 (68.5)	1.00 (ref.)	-
Male	63 (31.5)	0.211 (0.124-0.713)	0.425
Marital status			
Married	170 (85)	1.00 (ref.)	-
Single	30 (15)	0.452 (0.413-1.451)	0.528
Place of residence			
City	120 (60)	1.00 (ref.)	-
Rural	35 (17.5)	0.426 (0.359-1.498)	0.258
Suburb	45 (22.5)	0.512 (0.481-1.479)	0.359
Occupation			
Employee	75 (37.5)	1.00 (ref.)	-
Worker	45 (22.5)	0.547 (0.875-1.204)	0.414
Freelance	50 (25)	0.257 (0.425-0.897)	0.115
Retired	30 (15)	0.313 (0.478-1.124)	0.278
Spouse's occupation			
Employee	45 (22.5)	1.00 (ref.)	-
Worker	35 (17.5)	0.426 (0.359-1.498)	0.258
Freelance	80 (40)	0.411 (0.317-1.358)	0.218
Retired	40 (20)	0.369 (0.311-1.214)	0.125
Education level			
Illiterate	42 (21)	1.00 (ref.)	-
Undergraduate	48 (24)	0.258 (0.451-1.014)	0.091
Diploma	50 (25)	0.313 (0.459-1.101)	0.089
Associate degree and bachelor's degree	30 (15)	1.129 (0.657-2.217)	0.026
Master's degree and above	30 (15)	2.211 (0.712-4.547)	0.031
Spouse's education level			
Illiterate	46 (23)	1.00 (ref.)	-
Below diploma	58 (29)	1.201 (0.897-2.211)	0.414
Diploma	48 (24)	1.204 (0.879-2.103)	0.259
Associate degree and bachelor's degree	24 (12)	1.128 (1.129-2.123)	0.429
Master's degree and higher	24 (12)	1.414 (1.269-3.212)	0.525
Family economic status			
Unfavorable	88 (44)	1.00 (ref.)	-
Average	70 (35)	1.231 (0.899-2.259)	0.112
Favorable	42 (21)	1.451 (1.258-2.948)	0.089
Weekly physical activity			
Every day	38 (19)	1.00 (ref.)	-
Most days	42 (21)	0.175 (0.325-0.843)	0.024
Some days	50 (25)	0.115 (0.214-0.743)	0.032
Rarely	40 (20)	0.319 (0.587-0.998)	0.119
Never	30 (15)	0.441 (0.589-1.219)	0.214
Smoking			
No	170 (85)	1.00 (ref.)	-
Yes	30 (15)	0.419 (0.659-1.014)	0.251
Hookah usage			
No	180 (90)	1.00 (ref.)	-
Yes	20 (10)	0.458 (0.599-1.214)	0.328
Body mass index			
Underweight	28 (14)	1.00 (ref.)	-
Normal	52 (26)	1.258 (0.989-1.948)	0.217
Overweight	65 (32.5)	0.587 (0.876-1.489)	0.359
Obese	55 (27.5)	0.459 (0.589-1.313)	0.456
Visiting a health center monthly			
Once	84 (42)	1.00 (ref.)	-
Twice	86 (43)	1.254 (0.788-1.998)	0.123
More than twice	30 (15)	1.417 (0.841-2.125)	0.254
Information sources about blood pressure			
Healthcare workers	44 (22)	1.00 (ref.)	-
Internet	42 (21)	0.258 (0.475-1.123)	0.355
Radio and television	40 (20)	0.325 (0.649-1.214)	0.412
Friends and acquaintances	25 (12.5)	0.319 (0.589-1.147)	0.369
Books, newspapers and magazines	24 (12)	0.786 (0.712-1.459)	0.415
Others	25 (12.5)	0.696 (0.812-1.945)	0.159
Health literacy			
Insufficient	57 (28.5)	1.00 (ref.)	-
Not very sufficient	73 (36.5)	1.125 (0.858-2.491)	0.012
Sufficient	45 (22.5)	2.101 (1.478-4.452)	0.009
Excellent	35 (12.5)	3.145 (1.359-5.258)	0.003

Discussion

This study aimed to determine the relationship between health literacy and quality of life among patients with hypertension. The results showed that health literacy was at an undesirable level among the participants. The reason for the low health literacy could be due to their low level of education, because the level of education affects the level of health literacy of individuals [16, 19, 31].

Considering the effect of economic status on the level of health literacy of individuals [16], it can be said that another reason could be due to the economic status of the individuals studied, because only 21% of the individuals in the present study had a favorable economic status. This finding was consistent with the results of Vazifeh *et al.* [16], Radhi & Balat [17], and Kilic & Dag [32]. In addition, this finding was not consistent with the results of Dehvan *et al.* [15]. The possible reason for this discrepancy is the difference between the two studies in terms of health literacy measurement tools, because Dehvan *et al.*'s study used the Iranian health literacy tool. Another possible reason could be the difference between the two in terms of location, because location can affect the level of health literacy of individuals [33]. Also, 40% of our samples were living in non-urban areas, but in the mentioned study, 10.8% reported living in rural areas.

Also, the quality of life among the participants was at an undesirable level. It could be because low health literacy was associated with poor quality of life [18-20]. Therefore, considering the undesirable level of health literacy, it was expected that the quality of life would also be at an undesirable level. In addition, high blood pressure in affected individuals reduces the quality of life in physical, psychological, and social areas [24], which is consistent with the results of Masror Roudsari *et al.* [23] and Xu *et al.* [22], in which the quality of life among patients with hypertension is at an undesirable level.

Education level was one of the factors affecting quality of life. Science and knowledge contribute to the intellectual development of individuals. It also affects the way people behave, especially regarding health-related issues. Therefore, it can increase the quality of life for patients. Furthermore, education level may affect improvements in quality of life by increasing health literacy [19, 31]. These results are consistent with findings from various studies [20, 34, 35]. Moreover, physical activity was one of the factors affecting quality of life.

It can be argued that one of the most important self-care behaviors among patients with hypertension is physical activity. Physical activity among patients with hypertension can have a major impact on lowering and maintaining desirable blood pressure and a higher quality of life in these individuals [36, 37]. This finding is consistent with the results of Niazi *et al.* [37].

In addition, health literacy was one of the factors affecting quality of life. In fact, health literacy is a set of skills, capabilities, and capacities in various dimensions of health. These skills and capacities can manifest in accessing health-related information, reading it, understanding it, evaluating and analyzing it, and applying this information [20, 38, 39], and in these ways they affect individuals' quality of life [20]. Another reason could be the role of health literacy in controlling stress levels, disease self-management, and self-efficacy of individuals [19, 25]. This finding is consistent with the results of Panahi *et al.* [19, 20], Kooshyar *et al.* [40], Wang *et al.* [18], and Song *et al.* [41]. To our knowledge, this is the first study to assess the relationship between health literacy and quality of life among patients with hypertension in Qaynat. Among the limitations of the present study, we can mention self-reported responses by participants when completing the questionnaire, which might not have provided the research team with accurate information. In addition, the small sample size and limited access to patients who do not attend health centers were other limitations of the study. Other limitations include ignoring other dimensions related to health literacy, such as self-efficacy, communication, calculation, speaking, listening, and individuals' background and cultural knowledge; had these dimensions been considered, a broader and more comprehensive study of health literacy would have been possible. Given that the present study was conducted only among patients with hypertension referring to health centers in Qaynat, the results cannot be generalized to all patients in other parts of the country. Therefore, it is recommended to conduct this study on a larger scale with patients in other parts of the country.

Conclusion

Quality of life is lower among illiterate hypertensive patients, those with lower levels of physical activity, and those with insufficient health literacy.

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Ethical Permissions: This study was conducted in accordance with the Declaration of Helsinki and was approved by the Research Ethics Committee of Birjand University of Medical Sciences (IR.BUMS.REC.1403.172).

Conflicts of Interests: The authors declared that they have no competing interests.

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