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Relationship between Self-efficacy and Mental Health with Health Literacy in Patients with Diabetes in Kazerun City, Fars, Iran

Mohammad Taghi Sohrabi Renani [1], Fahimeh Nourafkan [2], Fariba Fathimard [1], Kaveh Sadegheyan khashoei [1], Roghayeh Mazarei [*3]

1. Department of PsyChology, School of Psychology, University of Islamic Azad branch Arak, Arak, Iran
2. Department of PsyChology, School of Psychology ,Tabriz university , Tabriz , Iran.
3. Department of PsyChology, Shahid chamran University of Ahvaz, Ahvaz , Iran

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Corresponding Author:
Roghayeh Mazarei
Roghayeh.mazarei@yahoo.com

ABSTRACT

Introduction: Since diabetes is a complex network of psychological and healthcare factors, this paper aims to investigate the relation between type 2 diabetes and mental health

Method: This study was analytical cross-sectional research on 60 diabetic patients referring to Kazerun health care centers, southwest of Iran, in 2018. The samples were selected by convenience sampling method. The data were collected using the Demographic Profile Questionnaire, General Self-Efficacy Scale (GSES), Health Literacy Questionnaire (HELA), and Mental Health Continuum (MHC-SF). Data analysis was performed in APSS v21 and from descriptive statistics including mean and standard deviation and using the statistical tests of Spearman correlation coefficient and multiple regression analysis (P <0.01).

Results: Mental health has a significant positive relationship with health literacy (p <0.001). Thus, individuals with better mental health evaluate their level of health literacy better. However, no relationship was found between self-efficacy and health literacy(r= -0/19, p >0.001). Besides, regression results indicated that mental health can predict a 54% variance of health literacy (R^2= 0.54, p <0.001).

Conclusion: The findings of this study shows that boosting an individual's mental health leads to an increase in health awareness in patients afflicted with diabetes which after all, can cause a better coping capability in these people.

Keywords: Self-efficacy, Mental health, Health literacy, Diabetic patients

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Introduction

The World Health Organization introduces mental literacy as a social-cognitive skill determining individuals' motivation and ability to perceive, understand, and use their information to preserve and promote their health. Low health literacy level is common among individuals with chronic conditions such as type 2 diabetes, and they are at risk for adverse complications (1). Type 2 diabetes is one of the increasing chronic metabolic diseases because of recent lifestyle changes (2). Based on available statistics, the number of people with diabetes is more than 5 million in Iran. The consequences of this disease's inappropriate management include cardiovascular diseases, neuropathy, retinopathy, amputation, blindness, and kidney failure. Thus, prevention and control of this disease are very important (3).

Thus, policymakers have considered health literacy an important issue to promote the level of general health and increase the quality of health services due to its impact on individuals' decision-making of health (4). Conceptually, health literacy on diabetes involves a set of conceptual and cultural awareness, speech, hearing, writing literacy, and mathematical skills, which are significant for the patient to manage their health care(5). The low mathematical level can lead to patients' poor performance with type 2 diabetes in reading and interpreting blood glucose level, adjusting the medicine intake, calculating carbohydrate intake, and performing other self-care activities (6). Low health literacy is associated with negative health outcomes such as difficulty in taking medicine, misunderstanding health messages, reducing the use of preventive services, and increased hospitalization. However, it is not obvious to what extent health literacy affects health outcomes while; there are many reasons why lots of health-related outcomes health outcomes are the result of insufficient health literacy, and the patients with higher health literacy have higher self-efficacy and self-confidence to involve with self-care behaviors (7). Self-efficacy as a cognitive and attitude concept plays a significant role in evaluating and improving chronic conditions (self-management, quality of life, behavior modification, hope, lifestyle changes, mental and physical health, disease prevention) and indicates patients' beliefs about their abilities on certain behaviors (8) In fact, self-efficacy beliefs refer to the beliefs of each person on his abilities to generate desired results while performing specific activities and pursuing goals (9). It is also effective in planning, initiating, preserving behavioral changes, and managing recurrence management (10 -11). Studies have shown that a person with low self-efficacy is less likely to make effort for conducting a new health behavior or changing the behavior he is used to (12). Studies which have investigated the factors associated with self-care in diabetes considered an important role for self-efficacy (13), so that self-efficacy has a good framework for understanding, predicting, and commitment of patient to self-care behavior in the treatment of diabetes. The results of studies by Hejazi, Peyman, Tajfard, and Esmaili (14) indicated that training the self-efficacy-based theory leads to increased health literacy, self-efficacy, and self-care behaviors among patients. In addition, the results of studies by Masoumehpour, Tirjani, and Ghanzafari (2017), Taheri, Qajri and Shahbazi (2018) and Seif et al (2018) Adili and Larijani (2006) research indicated a positive relationship between self-efficacy and health literacy among patients. Coping with all of these problems and the long treatment process can lead to many patients' crises (19). Psychological factors, having a great effect on the quality of life among diabetic patients, have been highly considered, and even some studies indicated the effect of mood factors in preventing diabetes among pre-diabetic patients.

Cognitive, behavioral, emotional, and social factors play an important role in developing, regulating, and controlling diabetes (20). On the other hand, like any other chronic and debilitating disease, this disease causes some problems affecting all aspects of daily life (21). The World Health Organization (WHO) regards mental health as a very important part of health, and planning is

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essential for its improvement. On the other hand, mental health's significance has been increasingly shown at health literacy and care literacy levels. Based on this organization, general health is considered the lack of mental disorder and a state of well-being. Everyone finds themselves empowered and talented to deal with the natural stresses of life, work usefully and successfully, and participate in society (22). Diabetes is an important concern for mental health, causing extensive effects on people's individual and social performance. Although most of these people deal well with the limitations of their disease, a significant minority of them have some problems in this area (23). Since the diabetic patients are at higher risk of death than the non-clinical population, they are often anxious and concerned about the outcomes of diabetes and poor disease management (24). A significant attention to the mental health of such patients can have a high effect on the quality of life and course of developing, regulating, and controlling diabetes. Mahnart and Kuch (25) indicated that the factors such as the acceptance of death and psychological distress, lifestyle and quality of life affect health and diabetic patients have high psychological distress (26). The results of studies by Arbabi, Mansouri, Noshirvani and Arbab (27) indicated a positive relationship between health literacy and general health among the patients with type 2 diabetes. In general, since diabetes is considered as the diseases by which the affected patients encounter mental and physical stresses, and many of them experience the problems of compatibility to the disease and avoidance of therapy, being directly related to living as a diabetic patient is important to reduce their disease in different areas by promoting the quality of life and presenting some training for the better management of their disease. Thus, this study investigated the relationship between self-efficacy and mental health with health literacy among diabetic patients.

Method

This study population included all patients with diabetes in Kazerun during 2018-2019, from whom 60 patients were selected by convenience sampling method. The sample size (60) was calculated using reading, and writing in Persian, at least six months Cochran's formula at an error level of 0.05. The sample size was calculated based on the following formula.

$$n = \frac{\frac{z^2 pq}{d^2}}{1 + \frac{1}{N}\left[\frac{z^2 pq}{d^2} - 1\right]}$$

Inclusion criteria were having type 2 diabetes, age of at least 18 years, the ability of speaking, reading, and writing in Persian, at least six months of diagnosis, and history of chemotherapy for diabetes. Also, the patients who were unwilling to continue treatment and had some cognitive problems were excluded from the study.

Research tools

Health literacy scale: To measure the level of health literacy in this study, the localized scale of Montazeri et al. (28) was used. This scale includes 33 questions measuring five dimensions of access (4 questions), reading (4 questions), comprehension (7 questions), evaluation (4 questions), decision making, and behavior (12 questions). The scoring of this Likert scale is 5 options. The reasons for using this tool were its local nature, dealing with all dimensions of health literacy, separating the dimensions, and the ease and speed of its completion than other tools. Reliability by Cronbach's alpha in subscales was reported in the range of 0.72- 0.89. Besides, exploratory factor analysis was used for evaluating the construct. The results indicated a good construct validity (28). In this study, Cronbach's alpha of this questionnaire was 0.94. The self-efficacy scale: Sherer and Maddox (29) developed this questionnaire, which has 17 questions for evaluating general self-efficacy and measuring three aspects of behavior such as the desire to initiate, desire to expand efforts for completing assignments, and resistance to deal with barriers. Scoring is based on a 5-point Likert (from 1 = completely disagree to 5 = completely agree) and scored inversely in questions 1-3-8-9-1-13-15. The

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range of scores on this scale is 17-85, and the high score shows a high self-efficacy. The reliability of this scale was reported as 0.86 in the study by Sherer and Maddox (29) and 0.83 in the study by Asgharnejad, Ahmadi Qutbuddini, Farzad and Khodapnahi (30). In order to investigate the criterion validity, Asgharnejad et al. (30) compared the internal correlation of this scale to the scale of Rutter's restraint scale (31)and achieved 0.34 as the partial correlation of Sherer self-efficacy scale and Rutter's restraint scale, 0.34 for the Pearson correlation between the scales mentioned above, and -0.27 for the correlation between these scales in the study by Sherer and Maddox(28). Cronbach's alpha of the questionnaire in this study was 0.75. Mental health questionnaire: The short form of mental health continuum used in this study was derived from Keys's long-form mental health continuum in 2002 (32) and included 14 questions from 40 questions of the long-form continuum.

This scale involves three questions (happiness, interest in life, satisfaction) for expressing feelings and emotions (emotional well-being), six questions (self-acceptance, overcoming responsibilities, positive relationships with others, personal growth, autonomy, purposefulness in life) for measuring mental health, and five questions (participation in society, integrity with family, social prosperity, social acceptance, and social attention and understanding) for showing social health. The scores on the short form of Bras' mental health scale is 6-option (from 1=never to 6=every day), and

Individuals are divided into three levels based on Keys' model at flourishing, moderate, and dejection. This scale has more than 0.80 validity and internal consistency (33-34). In the study by Khalili Vernakshi (35), the reliability of this scale was obtained as 0.85 using Cronbach's alpha, and its concurrent validity coefficient was obtained as 0.95 using happiness scale, which was statistically significant. Cronbach's alpha of this questionnaire was obtained as 0.91 in this study.

Results

Among the participants of the study, there were 32 females (53.33%) and 28 males (46.67%). Furthermore, 38 subjects had a diploma (63.33%), 8 subjects had an associate degree (13.33%), 12 subjects had a bachelor's degree (20%), and 2 had a master's degree (3.33%). The mean age of participants was 49.85. The minimum age was 35 and the maximum was 65. Table 1 displays the mean and standard deviation of general self-efficacy, mental health, and health literacy.

Table 1. The mean and standard deviation of general self-efficacy, mental health, subscales, and health literacy.

variables	Mean	SD
general self-efficacy	55.63	10.8
Emotional well-being	15.4	3.5
Mental health	26.26	7.4
Social health	23.26	5.41
Total mental health	64.93	14.46
Health literacy	21.3	24.76

Table 1 indicates that the mean of self-efficacy, health literacy, and mental health of diabetic patients is 55.63, 64.93, and 21.30, respectively. Further, among the mental health subscales, mental health (26.26) has the highest mean. To investigate the first hypothesis of this study, the correlation coefficient was used, the results of which are presented in Table 2.

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Table 2. The correlation coefficient between self-efficacy and mental health and its subscales with health literacy

Variable	Health literacy	
	r	p
Self-efficacy	-0.19	0.131
Emotional well-being	0.28	0.002
Mental health	0.53	0.001
Social health	0.48	0.001
Total mental health	0.52	0.001

However, there was no significant statistical relationship between self-efficacy and health literacy. In order to investigate the second hypothesis, the regression analysis was used, the results of which are presented in Tables 3 and 4 ($p<0.001$).

Table 3. Related to health literacy prediction using self-efficacy and mental health and its subscales

Source of Changes	Sum of Squares	Degree of Freedom	Mean Squares	F	p
Regression model	10566.408	3	3522.136	7.675	0.001
Remaining	25698.992	56	458.911		
Total	36265.4	59			

Table 4. The relationship between self-efficacy and mental health and its subscales with health literacy

Criterion variable	Predictor variables	Beta	p
health literacy	Emotional well-being	-0.02	0.99
	mental health	0.42	0.003
	Social health	0.13	0.52
	Total mental health	0.55	0.001

$R^2= 0.54$

The results of Table 4 indicated that mental health and total mental health can predict health literacy. The rate of multiple determination (R^2) in this regression was obtained as 0.54, indicating that 54% of health literacy variance was predicted by mental health.

Discussion

This study aimed to investigate the relationship between self-efficacy and mental health with health literacy among diabetic patients. The results indicated no significant relationship between self-efficacy and health literacy among diabetic patients. This result is consistent with the results of studies by Gerber et al.(36); (37- 38) and is inconsistent with the studies by Taheri and Saif, Massoudi et al. based on the relationship between health literacy and self-efficacy (15-17).

Self-efficacy is considered a cognitive factor mediating between health behaviors and health outcomes in most studies. Giborees et al. (2014) showed that self-efficacy, compared to attitude and risk perception, can act as an important mediator in the pathway between health literacy and physical activity. Self-efficacy dimensions, including perceived belief in symptom management and performance retention, can serve as a good indicator of life quality improvement compared to real health status. Moreover, tackling daily tasks can improve patients' sense of life mastery (39).

Vivienne and et al. (2008) indicated that although high self-efficacy can reduce some behavioral habits, it has little effect on improving physical activity or dietary changes (40), which can be due to the fact that people with high levels of self-efficacy may not understand any immediate threat to their health. Also, self-efficacy alone is not enough for creating self-care behaviors in diabetes without behavioral ability (knowledge and skills) in performing a specific action such as blood sugar management (41-42). On the other hand, it is not possible to promote self-efficacy without identifying its related factors. The factors such as increased age, decreased physical ability, and suffering from chronic disease reduce patients'

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self-efficacy. Individuals with chronic diseases (diabetes) require frequent interactions and communication with health care systems. The self-efficacy of these patients can reduce their dependency on healthcare organizations.(40) Identifying the effective factors in improving people's self-efficacy with chronic diseases such as diabetes can improve the quality of life, reduce hospitalization, and modify high-risk behaviors among these patients. In explanting of the lack of relationship between self-efficacy and health, it can be noted that knowledge and literacy on the disease can be affected by different cultural factors, readiness to learn, cognitive function, family support, barriers to care, and attitude of patients. All effective factors should be considered for the effect of different factors on health literacy (20). The studies on the relationship between self-efficacy and health literacy indicated that self-efficacy is a significant predictor of individuals' intention to conduct health behaviors and accept different behavior patterns. Self-efficacy and empowerment can be increased by creating the right environment to acquire the necessary skills and knowledge and achieve success.

Treatment and prevention of diabetes somehow depend on the individual's willingness to conduct self-care behaviors and improving the level of self-efficacy plays an essential role in adhering to self-care behaviors and controlling diabetes better (43). Evidence indicated low self-efficacy among diabetic patients (44) and also showed that low self-efficacy among the patients with chronic disease can have a negative effect on the quality of life (45). It seems that in type 2 diabetic patients, promoting self-care behaviors by enhancing self-efficacy can have a significant effect on improving the quality of life. High levels of self-efficacy among diabetic patients predict the higher quality of life (46). In fact, the dimensions of self-efficacy, including perceived trust in symptom and performance management, can be a better indicator of improving the quality of life than the real health status. Performing daily tasks can increase the patients' sense of mastering their lives (47). Besides, the results of the study indicated a significant positive relationship between mental health and health literacy among diabetic patients. This finding is consistent with the study by Arbabi et al. on the relationship between health literacy and general health (27).

Due to the importance of the relationship between mental health and health literacy, it seems that individuals with high levels of mental health can change their cognitions, emotions, and interpersonal and physical environment by regulating their behaviors actively to cause motivation for health actions. In general, they have a more positive attitude to life and more readiness to cope with life problems and good feelings about themselves and others. Thus, high levels of mental health can be related to higher levels of health-promoting behaviors and preventative behaviors (48-49). On the other hand, low health literacy in society makes it difficult to deal with diseases and related complications. Since health literacy in certain groups and populations of individuals and patients with chronic diseases is associated with mental health levels, increased levels of health literacy should be considered as one of the leading goals in fighting diabetes (50). In the study by Zhu et al. mental health disorders had a significant effect on self-control and caring behaviors of chronic patients (51). Psychological and social disorders among diabetic patients can also be a risk factor for self-care behaviors (52). Since the diabetic patients require emotional, cognitive, and behavioral changes because of increased self-care needs, they require cognitive, emotional, and behavioral needs (53). As a result, the psychological aspect of diabetes can have a high effect on this group of people's individual and social performance. Diabetes, as a chronic disease, and its deep complexities need careful self-care, training, and management. Since most of the educational content is based on dietary and self-care measures in the form of verbal and printed explanations, the need for advanced health literacy is one of the requirements of this disease (54)because the individuals with appropriate nutrition, control of insulin level, timely intake of medicine, exercise, and employment can live like other

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healthy individuals and their mental health does not differ from the mental health of the others in society.

The limitations of this study hover around data collection which was having been done through self-expression, low volume of samples and the choice of them based on availability. Accordingly, due to the limitations of correlation methods in explaining the causal relationships, it is highly suggested that experimental studies be carried out to increase the rate of health knowledge through training, improve mental health and improve the social support services in this regard.

Conclusion

In general, chronic diseases such as diabetes cause lots of clinical, social, and psychological problems, limiting individuals' physical and mental activity. In addition, this study showed that mental health in diabetics plays a significant role in predicting the health literacy of diabetic patients. Thus, all sectors of society, including mass media like television and radio, promote individuals' literacy and mental health by providing programs on health tailored to the audience's needs and capabilities. Besides, health professionals and health information producers must prepare educational resources such as websites, audio-visual materials, brochures, or other templates by identifying their target audience and their needs and capabilities.

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Conflict of interest

Thereby, the authors declare that this study has no conflict of interest with other organizations or individuals.

Author contribution

M.S conceived of the presented idea and K.S and F.N verified the systematic search. R.M and F. Fsupervised the findings of this work. All authors discussed the results and contributed to the final manuscript.

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