

Correlation between Social Support and Hope with Medication Adherence in Type II Diabetic Patients

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Abstract

Background & aim: Diabetes is one of the most common metabolic non-contagious disorders with disabling consequences, prolonged intangible course, and increasing prevalence. Social support is recognized as one protection against stress whereas hope is an internal power and available reservoir. This study aimed to determine the correlation between social support and hope with medication adherence in type II diabetic patients. **Methods and Materials:** The study population in this descriptive-correlational research consisted of diabetic patients presenting to diabetes clinics affiliated to Shahid Beheshti Medical University in Tehran. A sample of 160 type II diabetics was selected randomly as participants. Zimet's (1988) Perceived Social Support Questionnaire, Herth's (1999) Hope Questionnaire, and Morisky's (2008) Medication Adherence Questionnaire were used after establishing their reliability and validity. Data were analyzed with SPSS22. **Results:** The findings showed that %56.9 of the participants were female and %69.4 had a diabetes history of 3+ years. Also, although %80 of the patients had high perceived social support, their medication adherence rate was low. Hope was high in %56.9 of the patients. Besides, there was a significant direct correlation between social support and hope ($P < 0.001$, $r = 0.426$), between social support and medication adherence ($P = 0.018$, $r = 0.186$), and between hope and medication adherence ($P = 0.002$, $r = 0.248$). **Conclusion:** Social support and hope are factors affecting medication adherence in type II diabetic patients, the promotion of which can improve medication adherence and social development.

Keywords: Diabetes, social support, hope, medication adherence

INTRODUCTION

Diabetes is a chronic non-contagious disease with high importance in public health. Its prevalence has reached the level of global non-contagious diseases with a rate of 347 million patients ^[1]. The number of diabetics round the globe is estimated to be about 422 million ^[2]. The prevalence of diabetes is increasing in Mediterranean region. It is speculated that the annual rate of diabetes growth in Iran will rank second after Pakistan by 2030 ^[3]. Diabetic mortality still occurs despite recent advances in its diagnosis, treatment, management, and diabetes-related hospitalization ^[1]. This disorder is complex requiring self-care, education, and management. One of the seven essential principles of self-management behaviors is achieving blood sugar control for diabetics with medication adherence ^[4]. Adherence is a term used to measure suitable medication administration behavior. Adherence to prescribed drugs and self-care activities are highly important in achieving the intended goal of blood sugar control and preventing diabetes-related complications ^[5]. The WHO report (2003) announced lack of medication adherence as the leading cause of mortality and increased healthcare costs ^[6]. Low or no adherence to medication predisposes to weak clinical outcomes. Increased mortality accounts for %33-69 of hospitalizations, increased costs, use of expensive medical equipment, and repeated hospital

attendance ^[5]. Sources of lack of medication adherence such as costs, accessibility, patient's forgetting, or misinterpretation indicate patient barriers to appropriate medication adherence ^[7]. Some investigations report a rate of %23-93 for lack of medication adherence in diabetics whereas others report a rate of 1/3 to 3/4 of patients ^[8]. The high costs of diabetes and socio-economic limitations are significant factors to understand their lack of treatment adherence. One of these factors is the absence of social support for guiding an active and healthy life style; thus,

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diabetics' adherence and compliance ought to be considered from the social and environmental aspects, as well. Chronic complications of diabetes reduce hope leading to increased mortality. This imposes heavy economic loads on the individual, family, and community affecting the quality of individual and familial life [9]. Many scholars believe that diabetes belongs to the individual's family. Since roughly 92% of the elderly in Iran are taken care of by their families, family support has been rendered as a vital component of successful control of diabetes [10-12]. Social support is not limited to just familial support; rather, it also includes persons acting outside the family such as friends and social facilities like financial support and services. Social support by family and friends is associated with better results of diabetes management such as self-management, diabetes control, reduction of stress related to performing self-care behaviors, facilitating compatibility and adaptation with diabetes diagnosis, and provision of resources for frequent engagement in self-care behaviors [13]. Investigations have demonstrated a significant correlation between social support and health so that persons with greater social support enjoy better health [14]. The results of a study on type II diabetics revealed that 20.8% of the patients enjoyed proper social support which is a low rate [11]. Moreover, another study suggested that the participants obtained 58.1% of the socio-familial support score which is not acceptable. The study further reported a significant positive correlation between perceived social support and self-care behaviors [15]. The increasing rate of diabetes has sounded the alarm for inappropriate control of diabetes in Iran. One major solution concerns the factors that affect self-care. In treating different physical disorders, in addition to common medical treatments, due attention ought to be paid to negative personality changes that affect the incidence of diseases as well as positive personality features that foster resistance in individuals. Today, more attention is given to the mental and personality aspects that influence incidence and treatment of diseases. It is believed that a biopsychosocial approach is mandatory in treating and controlling diabetes so that changes in life style and treatment adherence can diminish prevalence of diabetes by up to 85% [16]. Hopefulness (hope) is one of the basic needs of human beings since a disappointed human cannot take any step to achieve personal and, especially, social objectives [17]. Hope is one of the variables that play an essential role in stressful life events. A study showed that the rate of hope is lower in patients with chronic disorders than in healthy ones [18]. The chronic nature of diabetes exerts many effects on the body, mind, and personal and social performance of the patients. Diabetes, in which life style is very important, may play a role in decreasing hope [19]. Diabetics have a low quality of life compared to diabetes-free individuals. This consequence, nonetheless, has a better status compared to individuals that suffer from other chronic conditions with severe complications. The results of some studies have indicated that hope of diabetics has increased over the last 30 years. This is due to advancements in diabetes care over the last 20-30 years such as faster diagnosis and management of this disorder [20]. Another study showed that

the hope scores of type II diabetics that was 1.53 at the onset of the study was increased to 2.86 after teaching life skills [19]. In addition, another study suggested that teaching hope-therapy to cancer patients increased their hope mean score from 417.21 before the test to 7837.08 after the test [21]. Also, hope-therapy interventions can promote general health and reduce psychopathological symptoms [22]. Given the increasing rate of diabetes in developing countries and the effect of the disease on the psychosomatic health of the patients, also the high rates of lack of medication adherence and the importance of the role of social factors, especially social support in patients' adherence behaviors and the role of hope in promoting level of patients' health, and considering that previous studies have ignored the correlation between social support and hope with medication adherence, this study used Perceived Social Support Questionnaire and Hope Questionnaire to investigate diabetic patients regarding rate of observation of diet-therapy regimen to answer the following question: "Is there any correlation between diabetics' social support and hope with their medication adherence?". The answer to this question will provide an approach for interventional studies to increase social support and hope and improve medication adherence in these patients.

METHODS

The population study of this descriptive-correlational study consisted of diabetics that had presented to the clinics of Imam Hussein Hospital, Labafinejad Hospital, and Shohadaye Tajrish Hospital affiliated to Shahid Beheshti Medical University during June and July, 2019. The study sample included type II diabetics that presented to these clinics. Sample volume was estimated to be 160 patients

using the formula: $n = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2 (s_1^2 + s_2^2)}{(\mu_1 - \mu_2)^2}$ with CI=95%, $\beta=0.2$, and $\alpha=0.05$ similar to the study by Sung *et al.* (2017) [23]. Stratified cluster sampling was used to select the participants. To do so, 55 patients from Imam Hussein Hospital, 55 from Labafinejad hospital, and 55 from Shohadaye Tajrish Hospital entered the study. The inclusion criteria were: Iranian nationality, age of 40-60 years, medical treatment with oral medicines or insulin administration, passage of at least 6 months after diagnosis, and absence of any other physical or mental disorder. Data were gleaned with demographic questionnaire, perceived social support scale, hope questionnaire, and medication adherence questionnaire. The demographic questionnaire included gender, occupation, family income, length of affliction with diabetes, patient's insurance status, source of information, and frequency of oral medicine or insulin administration. Scale of "Social Support Perceived by Family, Friends, and Important Individuals" was developed by Zimet *et al.* (1988). This 12-item scale uses a 5-point Likert scale ranging from "completely agree" to "completely disagree". The total score of the scale was obtained by adding the points obtained by each item. The total score ranged from 12 to 60. A score of 12-24 indicated low perceived social support, a score of 24-36 showed moderate perceived social support, and a score of 36+ showed high perceived social support. The content validity of the

instrument was confirmed by Bahrami *et al.* (2014) [24]. Its reliability was assessed by exploring 20 pilot samples and the Cronbach's α of internal consistency coefficient was 0.888. Herth's 12-item Hope Questionnaire, developed in 1999, was used to evaluate hope. It uses a 3-point Likert scale ranging from "I agree, I'm not sure" to "I disagree" with no time limitation. Item 6 was scored using the scoring pattern of "agree=1, I'm not sure=2, and disagree=3" and the other items were score reversely. In this scale, a score of 12-24 indicated low, 25-30 moderate, and 31-36 high hope. The content validity of Hope Questionnaire was approved by Poorghaznein *et al.* (2009) [17]. The reliability of the questionnaire was assessed using 20 pilot samples and Cronbach's α was estimated to be 0.887 using internal consistency coefficients. To examine medication adherence, Morisky's Medication Adherence (2008) was applied. This 8-item questionnaire was scored by the paradigm "yes=1 and no=0". Item 8 was scored with a 4-point Likert scale ranging from "always=0, usually=0, sometimes=1, never/rarely=1". Items 5 and 8 were scored reversely. The total score ranged between 0 and 8 in which a score of >2 indicated weak medication adherence, a score of 1 and 2 showed moderate adherence, and a score of 0 showed high adherence. The face and content validity of the mentioned questionnaire was explored and investigated by Kooshyar *et al.* (2013) [25]. The reliability of the instrument was evaluated using 20 pilot samples. Its Cronbach's α was 0.571 using internal consistency coefficients. The participants were selected randomly and entered the study on the basis of inclusion criteria. Approval of the Committee of Ethics in Human Research was obtained and principles of patient privacy and information confidentiality were observed. Research goals and procedures were explained to the patients. After completing of questionnaires, the culled data were analyzed with SPSS22 using descriptive statistics (frequency and percentage) and inferential statistics, i.e., Pearson correlation coefficient, to examine correlation between social support and hope with medication adherence.

RESULTS

Of 160 participants, %43.1 was male and %56.9 was female. Duration of diabetes was less than 3 years for %30.6 and more than 3 years for %69.4 (Table 1). The findings suggested that though %80 of the patients had high perceived social support, medication adherence was low in %48.8 whereas hope was high in %62.5 (Table 1). The results of correlation in Table 2 indicated a significant direct correlation among components of perceived social support, hope, and medication adherence. Moreover, regression analysis showed a significant direct correlation between social support and hope ($P<0.001$, $r=0.426$), between social support and medication adherence ($P=0.018$, $r=0.186$), and between hope and medication adherence ($P=0.002$, $r=0.248$). Furthermore, statistical tests suggested a direct significant correlation between the subscale "social support by the family" and medication adherence ($P<0.001$, $r=0.256$) and between "social support by others" and medical adherence ($P<0.001$, $r=0.273$); nonetheless, there was no significant correlation between

"social support by friends" and medication adherence ($P=0.541$, $r=0.049$).

DISCUSSION

This study investigated the correlation between perceived social support and hope with medication adherence in type II diabetics. Most participants reported social support and hope at an appropriate level and medication adherence at low level. Diet therapy of diabetes is highly complex and part of the regimen depends on adherence to medicinal regimen. Weak medication adherence leads to increased use of healthcare systems imposing much cost on patients, i.e., costs before hospitalization that is more expensive and time-consuming than services related to the main location in the initial point of the care chain. Causes of lack of adherence to diet therapy pertain to issues of costs, accessibility, and patient's forgetfulness or misinterpretation [7]. Treatment adherence for controlling blood sugar level is well-known among diabetics and decreases most of the risks of known complications. It is easily understood that medication adherence as a self-care affair can predispose to better blood sugar control. Moreover, the study by Linni Gu *et al.* identified more factors affecting patients' medication adherence such as administration of multiple drugs, and psychological, social, economical, and therapeutic factors [26]. Hence, an understanding of psychosocial parameters that reduce medication adherence and finding suitable strategies for increasing medication adherence seem mandatory. On the basis of the results, increased total social support was correlated with increased medication adherence in diabetic patients. Besides, there was a significant direct correlation between the subscale "social support by family and other relatives" and medication adherence; yet, there was no significant correlation between the subscale "social support by friends" and medication adherence. Family is the first and most important foundation in which an individual has membership and is in contact with other members; thus, perceived support by the family exerts the greatest effects on the patients' quality of life compared to friends that do not have daily contact with them. In line with the present study, Morovati Sharifabad and Rowhani Tonekaboni (2008) conducted a study on 120 diabetics presenting to Yazd Diabetes Research Center and found that the total perceived social support was correlated with self-care behaviors and that higher familial support behaviors are correlated with higher self-care behaviors. The study above reported that in educational programs for increasing self-care level, familial support can aid in the success of the programs [15]. Another study by Heidari *et al.* (2009), carried out on 150 elderly type II diabetics, found a significant direct correlation between social support and blood sugar control. The results reemphasized the role of family support in improving health in the elderly [12]. In the clinical trial performed by Khosravizadeh Tabasi *et al.* (2013) on 91 diabetics, there was an increase in the correlation between medication adherence and familial social support in case patients after intervention. Indeed, teaching social support on the basis of educational needs of family members leads to a direct effect on patients' medication adherence [27]. Additionally, Galsgow *et al.* stated

that family support is one of the strongest factors determining adherence to diet therapy in type II diabetics. Klomegah asserted that if family members, friends, and relatives follow a healthy nutritional diet, adherence to such a regimen will be easier for patients. The results of this study concerning the subscale “social support by friends” are not consistent with our findings. This contradiction may be attributed to differences in the culture of participants under study and their communication in different communities [28]. The study by Chlebowy & Garvin (2006) on 91 type II diabetics in the US found no significant correlation between social support and self-care behaviors [29]. These results are not consistent with our study probably due to different physiologic reactions in different ages proportional to diabetes-related stresses and also due to different cultures of communication in families and communities under study. Besides, unsuitable and poor communication of the patient with family may result in low medication adherence and inappropriate metabolic control of the condition. Our results revealed a significant correlation between hope and medication adherence. Hope is an internal force that enables the individual to see a landscape higher than the present condition and sufferings leading to fostered efforts for promoting quality of life through adherence to diet therapy. In line with the present study, Berg *et al.* (2007) conducted a study on 48 asthmatic patients and found a significant correlation between hope and medication adherence [30]. Furthermore, another study (2018) on 105 schizophrenic patients suggested a significant direct correlation between hope and medication adherence [31]. Another study (2014) on 101 patients receiving primary care showed a correlation between greater treatment adherence and increased hope and cited that promotion of motivation and greater treatment adherence would lead to enhanced hope in patients [32]. The results of the study by Rahmani *et al.* (2017) suggested a direct association between score of social support by family, friends, and others and score of patients’ hope [33]. Social support is rendered as one of important factors in self-care, treatment adherence/compliance, and disease control [34]. If patients enjoy social support, their stress level will greatly decrease and this support serves as a shield against disease-induced stress [35]. In the case that self-efficacy and social support by family are higher, self-management of diabetes will be also improved [36]. Social support makes the individual acquire feelings of care, being loved, self-esteem, and self-worth [14]. It influences adaptation and compatibility indices through physiological, cognitive, and emotional paths resulting in improved hope of patients [37]. Our findings demonstrated a direct significant correlation between social support and hope in type II diabetic patients. Indeed, persons with high social support manifest high levels of hope; thus, it may be concluded that this variable is one of the influential factors affecting hope and medication adherence in diabetics [38]. Moreover, Duggleby *et al.* (2004) introduced social support as the most important strategy that affected hope [39]. Finally, the study by Servellen *et al.* reported a correlation between improved hope and increased treatment adherence in an adult population [40]. In fact, patients regain their lost hope after undergoing a therapeutic

program and a feeling of recovery. Families can, through an awareness of this, increase patients’ hope and improve the use of information on chronic disorders resulting in enhanced adherence to medical regimens [8]. Briefly, it may be concluded that considering the goals of the study and the obtained results, social support and hope are related to adherence to therapeutic regimen in type II diabetics. In this regard, diabetic patients’ quality of life may be improved through educational programs, therapeutic regimens, self-care for patients and their families, implementation of rehabilitative interventions based on self-management behaviors at the individual and social levels, and improvement of adherence to diet therapy resulting in reduced costs.

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Conflict of interests

The authors declare no conflict of interests.

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Table 1: Frequency distribution of demographic variables and levels of scores of social support, medication adherence, and hope

Variable	Measurement Scale	Frequency	Percentage
Gender	Male	69	43.1
	Female	91	56.9
Duration of diabetes	Less than 3 years	49	30.6
	More than 3 years	111	69.4
Occupation	University students	4	2.5
	Unemployed	122	76.3
	Employed	34	21.3
Rate of income	Less than sufficient	75	46.5
	Sufficient	80	50
	More than sufficient	5	3.1
Insurance	With coverage	143	89.4
	Without coverage	17	10.6
Information source	Radio	11	6.9
	TV	110	68.8
	Magazines & newspapers	39	24.4
Frequency of drug administration	Once per day	29	18.1
	Twice per day	98	61.3
	Thrice per day	33	20.6
Perceived social support	Low level (12-14)	11	6.9
	Moderate level (25-36)	21	13.1
	High level (36+)	128	80
Hope	Low (12-24)	16	10
	Moderate (25-30)	44	27.5
	High (31-36)	100	62.5
Medication adherence	High (score of 0)	25	15.6
	moderate (score of 1 and 2)	57	35.6
	low (score of greater than 2)	78	48.8

Table 2: Pearson's correlation coefficients among scores of perceived social support, hope, and medication adherence and their components

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Score of social support by family (1)	1								
Score of social support by friends (2)	0.084	1							
Score of social support by others (3)	** 0.880	-0.004	1						
Score of social support (4)	**0.811	**0.618	**0.762	1					
Score of hope in terms of cognitive-temporal (5)	**0.271	**0.338	**0.209	**0.393	1				
Score of hope in terms of emotional-behavioral (6)	**0.267	**0.220	**0.288	**0.746	**0.354	1			
Score of hope in terms of proportional-contextual (7)	**0.361	**0.247	**0.342	**0.769	**0.799	**0.430	1		
Score of hope (8)	**0.324	**0.295	**0.300	**0.426	**0.919	**0.918	**0.925	1	
Score of medication adherence (9)	**0.265	-0.049	**0.273	*0.186	*0.183	**0.251	**0.256	**0.248	1

* p<0.05 and ** P<0.01