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Research Article

The Relationship between Quality of Life and Social Support in People with Diabetes with Lower Limb Amputation

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ABSTRACT

Introduction: Diabetes mellitus (DM) is the most common metabolic disorder. The improvement of the quality of life (QoL) of people with DM is one of the goals in most health systems. This study was conducted to investigate the relationship between the QoL and social support in these individuals.

Materials and Methods: Forty people with diabetes with lower limb amputation participated in this descriptive cross-sectional study. For data collection, the multidimensional scale of perceived social support (MSPSS), medical outcome study-social support survey (MOS-SSS), the diabetes quality of life (DQoL), and demographic questionnaires were used.To examine the relationships between the variables, an independent t-test, Pearson correlation coefficient, Spearman's correlation coefficient, and multivariate analysis were performed by SPSS software, version 22.

Results: In this study, 56% of the participants (22 people) were male and the rest were female. The results of the linear regression analysis showed that there was a significant and direct relationship between QoL and social support resources (P=0.002, β=0.514) and dimensions (P=0.01, β=0.458). QoL was significantly correlated with marital status (P=0.015) and economic status (P=0.046).

Conclusion: Increased social support enhances QoL in people with diabetes with lower limb amputation. Therefore, planning to improve social support is highly important in improving the QoL in these people.

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1. Introduction

Diabetes is the most common metabolic disease with an increasing prevalence known as the "silent epidemic"[1]. The International Diabetes Federation estimates that about 500 million people worldwide live with diabetes and expects that the number reach 700 million by 2045 [2]. Diabetes has many side effects, such as anxiety, distress, stress, depression, nutritional problems, and physical problems, including peripheral neuropathy, pain, infection, peripheral vascular disease, gangrene, and amputation [3]. Diabetes is a health concern and reduces life expectancy by up to one-third and 15% of annual health budgets in various countries spent on diabetes prevention and control programs [1]. The risk of amputation in people with diabetes is 15-20 times higher than in non-diabetics. Following the amputation, many problems are created for the individual to participate in society, such as the inability to establish family and social relationships, difficulty to perform personal and vocational duties, and ultimately the reduced QoL of the individuals and their family [3].

Diabetes is not curable, but it can be controlled, and programs, such as blood sugar control training, stress management training, self-care training, and anger management training are provided to manage and control it. Luthfa et al. and Heidari et al. showed that social support is effective in controlling diabetes and is considered one of the most important facilitators of health behavior in individuals with diabetes [4, 5]. Social support is the functional content of relationships that includes five dimensions of supportive behaviors. The dimensions of social support are conceptually different, but in practice are not independent of each other and include emotional support (expressing emotions, empathetic understanding, and encouraging the expression of emotions), informational support (suggestion, comment, information, guidance, or feedback), tangible support (providing material help and behavioral assistance), positive social interaction (having enjoyable and fun activities), and kindness support (expressing love, affection, and friendship) [6].

Social support causes a person believes he or she is respected by others and belongs to the network of social relations. Social support can be provided from formal and informal sources. Informal factors include religion and community, physical environment, family, and friends. Healthcare providers, workplaces, organizations associated with health services, the media, and community policies are the official agents of different levels of social support [7].

Ersoy-kart suggested that social support, as one of the emotional coping mechanisms, affects QoL [8]. One of the most important concepts in the field of health today is QoL. The World Health Organization (WHO) defines QoL as an individual's perception of his/her current situation in terms of culture and the relationship of these perceptions to one's goals, expectations, standards, and priorities [9].

Previous studies have demonstrated a positive effect of social support on diabetes control in people with non-amputated diabetes, but so far, no study has examined social support and QoL and their relationship in people with diabetics with lower limb amputation [10]. Considering the prevalence of diabetes and its increasing growth in Iran and the necessity and effect of factors, such as social support on the QoL of these individuals, this study aimed to investigate the relationship between social support and QoL in people with diabetes with amputation in the Ahvaz city, Iran.

2. Materials and Methods

Study design

Before the study, the researchers asked participants to sign the consent form letter and gave instructions about the topic and how to fill in the questionnaires.

Study participants

A total of 40 people (22 men and 18 women) with diabetes with lower limb amputation, who were referred to diabetes centers in Ahvaz City, participated in this study. Convenience sampling was used. All participants aged 30-65 years, had a definite and accurate diagnosis of diabetes (at least one year after diagnosis) and lower limb amputation by a specialist, and they were able to read and write Persian. Participants were not diagnosed with any mental or other physical disorders, including stroke, Parkinson's disease, or multiple sclerosis [8, 11].

Assessments

To collect data, a demographic questionnaire was used, which included the following items: age, gender, marital status (widowed/married), an education level (secondary school and lower/high school and higher), employment status (employed/unemployed), residence type (with espouse/with children), duration of the disease, satisfaction about financial conditions (satisfied/not satisfied), and time and level of amputation (below or above ankle). The following questionnaires were used to assess social support (sources and dimensions) and QoL.

1. Multidimensional scale of perceived social support (MSPSS): This questionnaire was developed by Zimet et al. (1988) to measure perceived social support by family, friends, and important people in life. The questionnaire consists of 12 items that measure the perceived social support of each individual in each of the three areas on a 7-choice scale of strongly disagree to strongly agree. The reliability of this scale has been reported using Cronbach's α coefficient for the above three sources [7]. Validity and reliability of the Persian version of this scale were reported by Salimi et al. through correlation with the social and emotional loneliness scale for adults and the life satisfaction scale as 0.77 and 0.42, respectively [12].

2. Medical outcome study-social support survey (MOS-SSS): Sherbourne and Stewart developed this scale in 1991 to measure the amount of social support a subject receives [6]. This includes five dimensions of social support, emotional support, informational support, tangible support, positive social interaction, and kindness. This scale includes 19 items scoring on a five-level scale (strongly disagree to strongly agree) and is scored from 1 to 5 and the total core is 95. The participants' high score on this scale indicates that they have good social support. Sherbourne and Stewart reported the reliability coefficients of this questionnaire using Cronbach's α method for each of the subscales [6]. Using Cronbach's α coefficient, the reliability of this test was reported as 0.97. The validity of the Persian version was confirmed [13].

3- Diabetes quality of life (DQoL) scale for diabetic patients: The DQoL questionnaire consists of 15 items introduced by Thomas E. Burroughs et al. [14]. The items of the questionnaire include patient care behaviors and satisfaction with disease control. The scale scores from 0 to 60. The questionnaire was translated into Persian and its reliability and validity were evaluated (r=0.72, ICC=0.001, P=0.77, and Cronbach's α coefficient was 0.77) [10].

All analyses were performed using SPSS software, version 22. A probability of <0.05 was considered statistically significant. Mean, median, standard deviation, and mid-quarter amplitude statistical indices were used for describing quantitative variables. In qualitative variables, frequency and percentage were used to describe the data. The normality of the data was evaluated using the Shapiro-Wilk test and Q-Q diagram. The QoL variable was skewed to the left. We first skewed the data to the right using the variable (max+1-variable) and then used the conversion of the root variable for the QoL variable. An independent t-test and Pearson and Spearman correlation coefficients were used to analyze the data. Variables that were unrelated to the response variable (QoL) in the univariate analysis (P<0.2) were not included in the multivariate analysis. The variables of social support resources and dimensions of social support were included in the model separately and their relationship with the QoL was measured by controlling other variables.

3. Results

In this study, 22(56%) men and 18(45%) women participated. The minimum and maximum age of the participants was 46 and 65 years, respectively (Table 1).

The mean score of tangible support was higher than other dimensions of social support (Table 2).

Among sources of social support, the family showed the highest average (6.17±0.86). This value for friends' support and support from significant other was 3.21±1.89 and 2.60±0.77, respectively. The mean score of QoL in all participants was 37±8.29 (2.47±0.55 out of 5).

Being married (P=0.015) and being satisfied with the economic conditions (P=0.046) had a positive relationship with QoL. The relationship between resources (P=0.001) and dimensions of social support (P=0.001) with QoL was statistically significant. The relationship between employment status (P=0.077), residence type (P=0.111), time since amputation (P=0.098), and QoL was not statistically significant (Tables 3 and 4).

To carry out multivariate analysis, we included variables whose univariate correlation was P<0.2. By controlling for other variables (marital status, employment, satisfaction with economic status, and time since amputation), the QoL score increased as the score of social support sources increased. This relationship was statistically significant (P<0.002, P=0.514) by controlling other variables (marital status, employment status, satisfaction with economic status, and time since amputation) by increasing the score of social support dimensions, the QoL score increased. This relationship was statistically significant (P=0.045, P<0.01) (Table 5).

Table 1. Demographic (A) and clinical characteristics of participants (B) (n=40)

A. Demographic characteristics of participants		
Variables (Qualitative)	**Status**	**No. (%)**
Gender	Male	22(55)
	Male	18(45)
Education level	Secondary school	29(72.5)
	High school and higher	11(27.5)
Marital status	Married	32(80)
	Widowed	8(20)
Employment	Unemployed	4(10)
	Employed	36(90)
Satisfaction with financial conditions	Satisfied	9(22.5)
	Not satisfied	31(77.5)
Amputation	Below ankle	18(45)
	Above ankle	22(55)
Residence	With espouse	33(82.5)
	With children	7(17.5)
Other amputations	Yes	4(10)
	No	36(90)

B. Clinical characteristics of participants	
Variables (quantitative)	**Mean±SD**
Age (y)	56.60±4.97
Number of children	3.93±1.85
Duration of the disease (m)	185.4±78.15
Time since amputation (m)	24.08±35.01

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Table 2. The mean scores of the subscales of social support

Social Support Subscales	Mean±SD
Tangible support	18.52±2.48
Informational support	16.56±3.00
Affectionate support	15.08±3.64
Emotional support	17.08±2.92
Positive interaction support	11.73±2.94

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Table 3. Relationship between QoL and qualitative variables

Variables	Status	Mean±SD	Median	Interquartile Range	Sig.
Gender	Male	36.23±7.88	36.5	12.5	0.423
	Female	37.94±8.92	41.5	14.75	
Education level	Secondary school and lower	35.96±8.72	35.00	15.00	0.284
	High school and higher	39.73±6.68	39.00	14.00	
Marital status	Widowed	29.88±9.37	26.00	16.50	0.015
	Married	38.78±7.10	40.00	10.75	
Employment	Unemployed	29.50±8.50	26.5	14.50	0.077
	Employed	37.83±7.96	38.5	11.75	
Residence	With espouse	38.03±7.90	39.00	11.00	0.111
	With children	32.14±9.03	32.00	16.00	
Satisfaction with financial conditions	Satisfied	41.67±6.46	43.00	12.00	0.046
	Not satisfied	35.65±8.36	36.00	16.00	
Other amputations	Yes	31.00±12.30	27.5	22.50	0.261
	No	37.67±7.69	38.5	11.5	
Amputation level	Below ankle	38.5±8.17	41	11.75	0.326
	Above ankle	35.77±8.39	34.5	14.00	

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4. Discussion

In the present study, a significant direct relationship was found between dimensions and resources of social support and quality of life in people with diabetes with lower limb amputation. This finding is consistent with the results of Haidarzadeh [15]. Improving the quality of life of people with chronic diseases is considerable. Having proper social support is the strongest force in dealing with everyday problems and life crises and diseases. Social support improves the quality of life of patients, creates a good feeling about life, better overall evaluation of life, and better coping and adaptation to disease, and reduces the negative effects of stress from the environment and society [7].

Compared to previous studies, participants had a lower QoL [14]. This may be because in this study, the QoL of diabetic people with amputation was examined but in previous studies, diabetic people with/without amputation were examined.

Supportive relationships with others may also help maintain a person's health by reinforcing, promoting, and enhancing healthy behaviors. In the present study, among the sources of social support, family support had the highest relationship with QoL, which is similar to the results of Fukunishi's study. He believes that identifying and providing sources of social support can be effective in better control of diabetes. Numerous studies have shown that family and social environment support has played an important role in promoting health [16, 17, 18]. Married people had a higher QoL than people who lost their spouses. This finding is consistent with the results of studies by Vaingankar et al. and Siva Kumar et al. reporting that a spouse as a source of social support can meet many emotional, informational, physical, and affectionate needs [18, 19].

In the present study, there was a significant direct relationship between all dimensions of social support and quality of life with a moderate correlation, which is consistent with the results of Heiydari et al. [5]. The more tangible support, information, emotion, kindness,

Table 4. Relationship between quality of life and quantitative variables

Variables	Normal Distribution (Shapiro-Wilk)		Correlation With QoL	
	Statistics	P	Correlation Coefficient r/rho	P
Age (y)	0.968	0.309	0.097	0.553
Disease duration (m)	0.968	0.288	0.130	0.425
Time since amputation (m)	0.675	0.001	0.265	0.098
Social support aspects	0.897	0.002	0.541	0.001
Sources of social support	0.963	0.207	0.620	0.001
Tangible support	0.666	0.001	0.350	0.027
Emotional support	0.858	0.001	0.561	0.001
Informational support	0.905	0.003	0.522	0.001
Kindness support	0.914	0.005	0.525	0.001
Positive interaction support	0.906	0.003	0.462	0.003
Family support	0.885	0.001	0.600	0.001
Friends' support	0.831	0.001	0.454	0.003
Significant other's support	0.864	0.001	0.575	0.001

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and positive interaction a person receives, the higher the QoL will be. In this study, the mean score of the tangible support dimension was higher than other dimensions of social support.

Similar to previous studies, in the present study, there was a significant relationship between satisfaction with economic status and QoL. Having a good financial situation can compensate for the financial burden of treatment and health needs of diabetics with amputation, and therefore is related to the QoL of these people [11, 20]. The relationship between QoL and time since amputation and the level of amputation was not as significant as in the study by Rukwong et al. [20].

The duration of diabetes with QoL in this study was not statistically significant in contrast to the study by Ahmadi et al. This is likely because the average duration of diabetes in this study was longer than that of Ahmadi et al. [21]. They can provide the necessary support to the

Table 5. Multivariate analysis

Variables	Non-standardized Coefficient	Confidence Interval	Standardized Coefficient	P
Marital status (married to widowed)	0.31	-0.17, 0.78	0.20	0.197
Employment (unemployed to employed)	-0.42	-1.71, 0.78	-0.10	0.514
Financial status (satisfied to unsatisfied)	0.67	-0.12, 1.46	0.23	0.095
Time since amputation	0.002	-0.012, 0.007	-0.064	0.637
Social support sources	0.055	0.022, 0.088	0.514	0.002
Aspects of social support	0.045	0.012, 0.078	0.458	0.010

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individual and consequently their QoL is less affected. Despite the relationship between education level and QoL in other studies [11, 22], there was no significant relationship between these two variables in this study. This may be due to the fact that most participants in the present study had undergraduate education.

As the present study was conducted in Ahvaz, caution should be observed in generalizing the results to residents of other cities. It is suggested to use the statistical population with more numbers and diversity in future studies.

5. Conclusion

In general, considering the direct and positive relationship between QoL and social support and the growing trend of diabetes and amputation, it seems that planning to improve social support in improving the QoL of people with diabetes with amputation is important.

Ethical Considerations

Compliance with ethical guidelines

The present research is a cross-sectional study approved by the Ethics Committee of Jundishapur University of Medical Sciences (Code: IR.AJUMS.REC.1397.671).

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Authors' contributions

Supervision, conceptualization, analysis, review, and editing: Seifolah Jahantabi-Nejad; Data collocation, analysis, and writing the manuscript: Sahar Kolivand; Training management, review, and data collection: Dorsa Hamedi.

Conflict of interest

The authors declared no conflict of interest.

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