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Perceived Social Support in Individuals With Diabetic Foot Ulcers

A Cross-sectional Survey

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ABSTRACT

PURPOSE: Explore levels of perceived social support and the associated factors among patients with diabetic foot ulcers (DFUs).

DESIGN: Cross-sectional survey.

SUBJECTS AND SETTING: Outpatients (n = 140) with DFUs attending a diabetic clinic affiliated with a public hospital in Athens, Greece, for wound care and follow-up visits after healing.

METHODS: Data collection included demographic, clinical, self-report, and perceived social support, measured with the Multidimensional Scale of Perceived Social Support (MSPSS), during one-on-one interviews at the post-healing follow-up visit.

RESULTS: For perceived social support, 50% of patients (average age 70 years) scored above 24, 24, and 18 (median) on the MSPSS in the categories of receiving support from significant other, family, and friends, respectively, suggesting high levels of perceived social support. Other statistically significant associations were observed for perceived social support from significant other, family, and friends and marital status ($P = .001$, $P = .001$, and $P = .004$, respectively), patients level of information about their health ($P = .002$, $P = .001$, and $P = .001$, respectively), family level of information ($P = .001$, $P = .001$, and $P = .004$, respectively), and how closely they followed period foot checks ($P = .001$, $P = .002$, and $P = .011$, respectively) and diet ($P = .001$, $P = .001$, and $P = .001$, respectively).

CONCLUSIONS: Data from our study show that higher levels of perceived social support from significant others, family, and friends were linked to patients and others, being better informed about health status, and other self-care behaviors. Findings underscore the need for health care providers to recognize that social support is an important component of overall DFU management and may guide future interventions to determine which are most effective in enhancing socially supportive behaviors.

KEY WORDS: Diabetes management, Diabetic foot ulcer, Perceived social support, Self-care, Wagner classification.

INTRODUCTION

Diabetic foot ulcers (DFUs) remain a common complication of diabetes mellitus and continue to be a highly relevant topic of clinical care and research due to substantial morbidity and mortality. Specifically, mortality rates are estimated to be 5% in the first 12 months from the development of a DFU and increase to 42% within 5 years.[1,2] These types of ulcers are associated with high health care expenditures[1-3]; 33% of diabetes-related costs are linked to DFUs,[3] the majority of which are related to hospital admissions,[4] and up to 17% result in amputation.[5,6] The risk of ulceration among people with diabetes increases by 2- to 4-fold with older age and longer duration of diabetes regardless of the type of diabetes.[2] Management of DFUs is complex as they are difficult to treat, many remain asymptomatic for long periods of time, they are often infected, they have slow healing trajectories despite intensive treatment, and they demand long and intensive treatment. Having an ulcer increases the likelihood for ulcer recurrence.[6,7]

Social networks such as family, relatives, or significant others play a crucial role in DFU management. While there are various definitions of social support, one is defined as the assistance offered to an individual by the people in his or her environment living with some type of chronic condition such diabetes.[8] It is well established that perceived social support is positively associated with improved self-management among individuals with diabetes mellitus,[8,9] and this support also positively influences diet and exercise.[10] Moreover, social support is a protective factor for individuals experiencing stressful life events. The chronic burden of diabetes is considered to be a daily stressor due to the demands placed on the individual to monitor blood glucose levels, eat a healthy diet, exercise, and take medications appropriately. Research indicates that increased social support is associated with reduced emotional distress.[11] However, the burden of diabetes care is increasing

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due to a growing aging population, which experiences multiple comorbid conditions and places older patients at risk for psychosocial stress, such as depression, when social support is perceived to be lacking.[12,13]

Patients have to accept and cope with the disease, increase self-care activities, strictly adhere to medications, manage weight, and maintain glycemic control.[11] Social support is known to reinforce patient self-efficacy, which, in turn, improves adherence and leads to improved health outcomes.[14] Family as a source of support plays an essential role in lifestyle changes,[15] while health care providers are a source of social support during office visits.[8] Family and friend contacts are associated with positive scores for activation such as self-efficacy and health-promoting self-management behaviors including exercise and foot examinations in patients with diabetes.[16] Emotional support, in particular, is associated with increasing active coping behavior.[17]

Important advances have been made in understanding the linkages between chronic conditions such as diabetes and social support; however, factors associated with social support among patients with DFUs have received less attention. Specifically, there is a paucity of research addressing perceived social support in the care of patients with DFUs.

To address these gaps, the aim of this cross-sectional study was to explore the levels of perceived social support reported by patients with DFUs who attended an outpatient wound clinic. We also assessed demographic, clinical (ie, type of treatment, Wagner ulcer classification, patient and family level of information about state of health), and self-reported characteristics such as adherence to foot self-inspection, diet, physical activity, medications, current health habits including smoking and alcohol use, and habits before ulceration (eg, frequency of daily foot hygiene).

METHODS

The study was designed as a cross-sectional survey of a convenience sample of patients with DFUs attending an outpatient diabetic clinic for wound care and follow-up visit after healing. The clinic was affiliated with a public hospital in Athens, Greece, and data were collected during a 10-month period from March 2018 through December 2018. Inclusion criteria were adult patients with type 2 diabetes and able to fluently write and read Greek. Exclusion criteria were having a traumatic ulcer, history of mental illness, and significant visual, hearing, or motor impairments that could hinder responding to self-report questionnaires.

Prior to data collection, patients received an explanation of the study by the researcher (L.F.), who assured potentially eligible study participants about protection of confidentiality of their data that were collected via interviews. Interviews lasted approximately 15 minutes and took place in a private area of the clinic while patients waited for their clinic follow-up visit.

Ethical Considerations

The study was reviewed and approved by the Medical Research Ethics Committee from the hospital (approval #60; date January 18, 2018; Tzaneio Hospital) and was conducted in accordance with the Declaration of Helsinki (1989) of the World Medical Association. Written informed consent was obtained from all patients.

Instruments

Demographic characteristics of participants included sex, age, marital status, education, job, residence, and number of children. Patients' clinical characteristics included comorbid conditions, medications, and blood glucose and hemoglobin A_{1c} (HbA$_{1c}$) levels. Self-reported characteristics included a family history of diabetes, adherence to foot self-inspection, diet, physical activity, medications, current health habits including smoking and alcohol use, and self-care habits before ulceration such as frequency of daily foot hygiene.

The grade of DFU was measured with the Wagner Diabetic Foot Ulcer Grade Classification System[18] as follows:

Grade 0: Intact skin
Grade 1: Superficial ulcer of skin or subcutaneous tissue
Grade 2: Ulcers extending into tendon, bone, or capsule
Grade 3: Deep ulcer with osteomyelitis or abscess
Grade 4: Partial foot gangrene
Grade 5: Whole foot gangrene

Perceived Social Support

To evaluate perceived social support, we used the Multidimensional Scale of Perceived Social Support (MSPSS) questionnaire, which has been translated and culturally adapted to Greek standards. The questionnaire assesses 3 dimensions of perceived social support, and the questions of each are expressed via level of support rated on a 7-point Likert scale from 1 to 7. In order to calculate the final score of each dimension of the questionnaire, scores of questions corresponding to each dimension are summed and divided by the number of questions per dimension. Higher scores reflect higher support. The scale has reported Cronbach $\alpha = 0.80$ and intraclass correlation coefficient $= 0.89$.[19]

Statistical Analysis

Categorical variables are presented as absolute and relative frequencies (percentages), and quantitative variables are presented as median and interquartile ranges since they did not follow the normal distribution (tested with histogram, QQ-plot, and Kolmogorov-Smirnov statistic). To test the existence of associations between patients' characteristics and scores of social support, the Kruskal-Wallis or Mann-Whitney test was performed, as well as Spearman's rho correlation coefficient. The level of statistical significance was set to $\alpha = .05$. The analysis was performed with IBM SPSS Statistics for Windows, version 25 (IBM Corporation, Armonk, New York).

RESULTS

Sample Description

For this study, we approached 160 individuals (20 refused participation) from the outpatient clinic for a final sample size of 140 participants. Males accounted for 60.7% (n = 85) of the sample, 32.9% (n = 46) were older than 70 years, 63.6% (n = 89) were married, 43.2% (n = 60) had primary school education, and 49.3% (n = 69) were retired (Table 1).

Table 2 describes clinical and health characteristics. We found that 48.6% (n = 68) had a family history of diabetes, 65.9% (n = 91) had concomitant conditions, 64.2% (n = 88) used insulin, 77.1% (n = 108) measured their blood glucose levels daily using a glucometer, and 54.3% (n = 76) had their HbA$_{1c}$ measured every 4 to 6 months.

TABLE 1.
Demographics (N = 140)

	n (%)		n (%)
Sex		Job	
Male	85 (60.7%)	Unemployed	6 (4.3%)
Female	55 (39.3%)	Civil servant	8 (5.7%)
Age, y		Employee	16 (11.4%)
<40	6 (4.3%)	Freelancer	13 (9.3%)
41-50	13 (9.3%)	Household	27 (19.3%)
51-60	45 (32.1%)	Retirees	69 (49.3%)
61-70	30 (21.4%)	Residence	
>70	46 (32.9%)	Attica	78 (55.7%)
Status		Capital city	38 (27.1%)
Married	89 (63.6%)	Small town	10 (7.1%)
Single	6 (4.3%)	Rural area	14 (10.0%)
Divorced	14 (10.0%)	No. of children	
Widowed	30 (21.4%)	0	8 (5.8%)
Living together	1 (0.7%)	1	31 (22.3%)
Education		2	87 (62.6%)
Primary school	60 (43.2%)	>2	13 (9.4%)
High school	55 (39.6%)		
University	24 (17.3%)		

In terms of patient self-report, 29.3% (n = 41) believed they were well informed about their health condition regarding diabetes and DFU management, 19.4% (n = 27) reported their family was also well informed, 53.2% (n = 74) believed they had good relationships with the nursing staff at the clinic, and 71.1% (n = 54) reported they depended on health care professionals for wound care versus self-care.

With regard to adherence to health recommendations, 23.6% (n = 33) followed foot inspection instructions, 13.6% (n = 19) followed their recommended diet, 61.2% (n = 85) followed their prescribed medication regimen, and only 7.1% (n = 10) adhered to proposed physical activity. For health habits prior to ulceration, 46.1% (n = 35) did not regularly inspect their feet and 35.1% (n = 26) did not wash and dry their feet daily. The median age of patients at diagnosis was 50 years, the median body mass index was 26.3 kg/m^2, and the median HbA$_{1c}$ level was 7.2 mg/dL.

Wagner Classification
The ulcers were graded via the Wagner classification as follows: grade 1, 30.8% (n = 43); grade 2, 27.9% (n = 39); grade 3, 17.9% (n = 25); grade 4, 14.3% (n = 20); and grade 5, 9.3% (n = 13).

Perceived Social Support
Table 3 shows results of the MSPSS, which suggests that at least 50% of the patients scored over 24, 24, and 18 (median) in receiving support from their significant others, their family, and friends, respectively. In addition, 25% of the patients scored above 26.5, 26, and 20, respectively. These values of possible range of scores (4-28) suggest that high levels of perceived social support were received by participants in our study.

Factors Associated With Perceived Social Support
Table 4 presents the health factors that were statistically significantly associated with social support. Statistically significant associations among many demographic and clinical variables were observed for patients' support scores from their significant others including marital status (P = .001), place of residence (P = .026), whether participants reported having other concomitant conditions (P = .015), and how strictly they followed their foot inspections, the proposed diet, medication, and physical activity (P = .001, P = .001, P = .001, and P = .009, respectively). Other associations were noted for the Wagner classification (P = .003), relationship with the nursing staff (P = .001), and daily inspection and hygiene of their feet before ulceration (P = .004 and P = .001, respectively).

With respect to social support, statistically significant associations were observed for support from family and marital status (both P = .001), the frequency of HbA$_{1c}$ measurement (P = .001), how strictly they followed foot inspection, proposed diet, and medications (P = .002, P = .001, and P = .001, respectively), Wagner classification (P = .045), relationship with the nursing staff (P = .001), and the daily hygiene of their feet before ulceration (P = .002).

Several statistically significant associations were observed among patients' support from their friends including age (P = .010), marital status (P = .004), educational level (P = .024), how often patients measured HbA$_{1c}$ (P = .001), and the age of diagnosis of the foot ulcer (P = .004). Finally, a statistically significant negative linear correlation was found between one's age at the time of diagnosis of the ulcer and the support levels from friends (r = −0.245). Support levels from friends decreased when the age of diagnosis was increased.

DISCUSSION
For our cross-sectional study of 140 individuals with DFUs who were receiving care in an outpatient wound clinic, we found that this sample received high levels of social support from family and friends. Those who reported higher perceived social support, measured with MSPSS subscales (from significant others, family, and friends), were more likely to be married, reported they and their family were better informed about their health status, adhered to foot inspection, diet, and medication regimens, and reported very good relationships with the nursing staff.

One of our major findings was that there were higher levels of perceived support for participants who reported very good relationships with nurses. The most plausible explanation for this finding is that a strong positive *relationship* between patients and nurses or their health care providers that jointly takes into account provision of accurate information may help patients integrate this information into better self-care. Health care providers are becoming part of their patients' social support networks since the chronicity of DFUs demands frequent visits to health care professionals for regular care and monitoring. Goetz and colleagues[8] reported that nurses within primary care settings are key stakeholders in supporting changes in lifestyle habits such as physical activity and dietary changes. Therefore, a strong relationship with nurses as a "therapeutic potential" seems to enhance perceived social support. The role and impact of nurses within the network of social support need to be more clearly defined as an important health care team member to provide care and information to patients with DFUs. Further study is needed to determine

TABLE 2.
Patient's Clinical and Other Characteristics (N = 140)

	n (%)		n (%) or Median (IQR)
Other family member with diabetes		Adherence to medication	
No	72 (51.4%)	Very	85 (61.2%)
Yes	68 (48.6%)	Enough	49 (35.3%)
Diagnosis		A little	5 (3.6%)
By chance	77 (55.0%)	Not at all	0 (0.0%)
Due to other problem	33 (23.6%)	Adherence to recommended physical activity	
After encouragement of others	22 (15.7%)	Very	10 (7.1%)
My decision to seek	8 (5.7%)	Enough	32 (22.9%)
Other disease		A little	71 (50.7%)
No	47 (34.1%)	Not at all	27 (19.3%)
Yes	91 (65.9%)	Wagner classification	
Treatment of diabetes		Grade 1	43 (30.8%)
Oral medication	49 (35.8%)	Grade 2	39 (27.9%)
Insulin	88 (64.2%)	Grade 3	25 (17.9%)
Measure blood glucose daily		Grade 4	20 (14.3%)
No	32 (22.9%)	Grade 5	13 (9.3%)
Yes	108 (77.1%)	How would you characterize your relations with the nursing staff?	
How often is HbA$_{1c}$ measured		Very good	74 (53.2%)
2-3 mo	36 (25.7%)	Good	55 (39.6%)
4-6 mo	76 (54.3%)	Moderate	10 (7.2%)
7-10 mo	18 (12.9%)	Do believe that you depend on health professionals for your wound care?	
11-12 mo	10 (7.1%)	Very	14 (18.4%)
		Enough	54 (71.1%)
Do you believe that you are informed about your state of health?		A little	54 (71.1%)
Very	41 (29.3%)	Not at all	8 (10.5%)
Enough	73 (52.1%)	Before ulcer, did you regularly check feet by yourself?	
A little	25 (17.9%)	No	35 (46.1%)
Not at all	1 (0.7%)	Yes	5 (6.6%)
Do you believe that your family is well-informed about the state of your health?		Some times	36 (47.4%)
Very	27 (19.4%)	Before ulceration, did you wash and dry your feet daily?	
Enough	76 (54.7%)	No	26 (35.1%)
A little	31 (22.3%)	Yes	7 (9.5%)
Not at all	5 (3.6%)	Sometimes	41 (55.4%)
Do you follow recommendations for regular inspection of your feet through the wound clinic?		Smoking	
Very	33 (23.6%)	No	55 (72.4%)
Enough	85 (60.7%)	Yes	21 (27.6%)
A little	20 (14.3%)	Alcohol use	
Not at all	2 (1.4%)	No	31 (40.8%)
Follows recommended diet		Yes	2 (2.6%)
Very	19 (13.6%)	Sometimes	43 (56.6%)
Enough	67 (47.9%)	Age of diagnosis	50 (40-60)
A little	49 (35.0%)	BMI	26.3 (24.3-29)
Not at all	5 (3.6%)	HbA$_{1c}$	7.2 (6.55-7.85)

Abbreviations: BMI, body mass index; HbA$_{1c}$, hemoglobin A$_{1c}$; IQR, interquartile range.

Support From	Median (IQR)
Significant others (range, 4-28)	24 (20-26.5)
Family (range, 4-28)	24 (21.5-26)
Friends (range, 4-28)	18 (16-20)

Abbreviation: IQR, interquartile range.

whether providers understand the concept of social support and its relevance to overall patient outcomes.

Also well-informed patients had higher levels of perceived social support (significant others, family, and friends). Patients who receive information and guidance during medical appointments are more likely to comprehend their health problems, understand treatment options, be more involved in participatory decision-making, and set realistic targets for behavior changes.[20-22] Possibly, patients who are more aware of

TABLE 4.
Factors Associated With Perceived Social Support

	Significant Others, Median (IQR)	P	Family, Median (IQR)	P	Friends, Median (IQR)	P
Age, y		.335		.247		**.010**
<50	24 (22-26)		24 (22-26)		20 (16-21)	
51-60	24 (23-27)		24 (23-27)		20 (17-22)	
61-70	23.5 (20-27)		24 (22-26)		16.5 (14-20)	
>70	22 (20-26)		23 (21-26)		16 (15-19)	
Status		**.001**		**.001**		**.004**
Married	25 (22-28)		24 (23-27)		19 (16-21)	
Single/divorced	21.5 (20-24)		23 (17-24)		16 (14-20)	
Education		.988		.757		**.024**
Primary school	24 (20-27)		24 (21-27)		17 (16-20)	
High school	24 (20-26)		24 (21-26)		18 (14-20)	
University	23.5 (21-25.5)		24 (23-25)		20 (17-21)	
Job status		.980		.666		**.010**
Unemployed/household	24 (20-26)		24 (22-26)		20 (16-21)	
Employee	23 (21-26)		24 (22-27)		20 (16-21)	
Retirees	24 (20-27)		24 (21-26)		16 (15-20)	
Residence		**.026**		.051		.050
Attica	23 (20-26)		23 (21-25)		17 (14-20)	
Capital city	24 (20-27)		24 (22-27)		20 (16-21)	
Small town/rural	26 (23-28)		24 (22.5-27)		19.5 (16-22.5)	
Other diseases present		**.015**		.067		.944
No	21 (20-25)		23 (18-27)		18 (16-20)	
Yes	24 (22-27)		24 (23-26)		19 (15-21)	
How is HbA$_{1c}$ measured		.064		**.001**		**.001**
2-3 mo	25 (23-27)		25 (24-27)		20 (17-22.5)	
4-6 mo	23 (20-26)		24 (21.5-25)		18 (16-20)	
7-10 mo	22 (20-26)		21.5 (17-25)		17 (12-20)	
11-12 mo	22 (12-28)		20.5 (12-24)		10 (8-16)	
Do you believe that you are informed about the state of health?		**.002**		**.001**		**.001**
Very	26 (24-27)		26 (24-27)		20 (18-21)	
Enough	23 (20-25)		24 (22-24)		17 (16-20)	
A little/not at all	21 (20-26)		22.5 (17-24)		16 (11-20)	
Do you believe that your family is well-informed about the state of your health?		**.001**		**.001**		**.004**
Very	26 (24-28)		27 (24-27)		20 (17-21)	
Enough	24 (21-26)		24 (22-26)		19 (16-20.5)	
A little/not at all	20 (19-24.5)		19.5 (14.5-24)		16 (12-20)	
Follows foot inspection recommendations		**.001**		**.002**		**.011**
Very	25 (23-28)		25 (24-27)		20 (17-21)	
Enough	24 (21-26)		24 (22-26)		19 (16-20)	
A little	20 (19-24)		21.5 (15-24)		15 (9-20)	
Follows recommended diet		**.001**		**.001**		**.001**
Very	28 (24-28)		26 (23-28)		20 (19-20)	
Enough	24 (21-27)		24 (23-27)		19 (16-21)	
A little	22 (20-25)		23 (17-24)		16 (12-20)	

TABLE 4.
Factors Associated With Perceived Social Support (*Continued*)

	Significant Others, Median (IQR)	P	Family, Median (IQR)	P	Friends, Median (IQR)	P
Adherence to medication		.001		.001		.001
Very	25 (22-27)		24 (23-27)		20 (16-21)	
Enough	22 (20-24)		22 (19-24)		16 (14-20)	
Adherence to recommended physical activity		.009		.060		.001
Very	26 (25-28)		25 (25-26)		21 (20-24)	
Enough	24.5 (21-27.5)		24 (22.5-27)		20 (17-22)	
A little	24 (20-27)		24 (21-27)		17 (15-20)	
Not at all	22 (20-24)		23 (21-24)		16 (14-18)	
Wagner classification		.003		.045		.362
Grade 1	24 (22-28)		24 (22-26)		17 (16-20)	
Grade 2	23 (20-27)		24 (21-25)		20 (16-21)	
Grade 3	22 (20-24)		22 (19-25)		19 (15-20)	
Grade 4	25 (24-28)		25.5 (23.5-27)		18 (14-20.5)	
Grade 5	22 (20-22)		23 (21-25)		16 (16-16)	
How would you characterize your relations with the nursing staff?		.001		.001		.001
Very good	25 (22-28)		24.5 (23-27)		20 (16-21)	
Good	22 (20-24)		23 (19-24)		16 (14-19)	
Moderate	23 (19-28)		23 (17-24)		16 (8-20)	
Before ulceration, did you regularly check feet by yourself?		.004		.111		.404
No	22 (20-25)		24 (22-27)		19 (16-20)	
Yes/sometimes	24 (23-28)		25 (24-26)		20 (16-21)	
Before ulceration, did you wash and dry your feet daily?		.001		.002		.422
No	21.5 (20-23)		22.5 (21-26)		19 (17-20)	
Yes/sometimes	25 (23-27)		25 (24-27)		20 (16-21)	
	ρ	P	ρ	P	ρ	P
Age of diagnosis	−0.051	.548	−0.080	.348	−0.245	.004

Abbreviation: IQR, interquartile range. Bold values indicate a significance of $P < .05$.

their needs seek help, are more accepting of their supportive networks, or perceive support to be positive.

Furthermore, those who reported higher levels of perceived social support from significant others, family, and friends believed they were more or "very" informed about their health status. Rad and colleagues[23] noted that diabetes is sometimes called a "family disease" because its management involves many family members. Following this line of thought, it is possible that well-informed family provides support to patients so as to facilitate self-care behaviors or help them perform a behavior modification. Also, it is suggested that health care providers understand that the family support system as family, significant others, and friends is fundamental to developing appropriate interventions and actionable plans to support patients' self-care.

Furthermore, higher levels of perceived social support were noted in patients who reported to adhere to periodic foot checks and proposed diet and medication regimens. Receiving informational support such as handouts and verbal instruction has been found to be associated with more positive attitudes toward taking an active role in medical treatment. Studies of socially supportive approaches to promote patient adherence include encouraging optimism and self-esteem and have been found to reduce depression and improve sick-role behaviors.[24,25]

Patients who had their HbA$_{1c}$ tested more frequently (every 2-3 months) also had higher support levels from friends and family. The measurement of HbA$_{1c}$ is recommended as a standard of care for monitoring and controlling diabetes mellitus and also is significantly associated with better wound healing.

Patients who perceive support from other individuals, such as respect and understanding, may have a more positive mood that may affect self-efficacy about disease management, which, in turn, leads to better glycemic control.[26-28] However, in our study, only 25.7% of participants had their HbA$_{1c}$ levels measured and the median value was 7.2, suggesting less than optimal control. The present findings were available from patients' medical records and are similar to findings reported by Shao and colleagues,[14] who reported that 35% of 532 patients with diabetes achieved glycemic control of an HbA$_{1c}$ level of less than 7%.

Perhaps, of greater concern is our finding that self-care habits before having a DFU were associated with lack of perceived social support. Knowledge and habits regarding foot care can delay the onset of foot conditions that lead to ulcers. Additionally, education and primary prevention of DFUs are important to reduce the associated high morbidity and mortality rates, as well as the risk of amputation.[6,29] Thus, placing a greater emphasis on education even at follow-up visits would reinforce the needs for constant self-care vigilance.

Participants who checked their feet regularly and cleaned and dried their feet on a daily basis before ulceration reported they had higher support from others, family, or friends. Exploring attitudes before ulceration in this high-risk group may enable changes in behavior, promote proper self-care activities, and reduce the risk for lower-limb amputations. Providing social and emotional support may promote behavioral modification to prevent future ulceration.

LIMITATIONS

There are a number of limitations that are important to consider in the interpretation of our results. First, this study was limited by convenience sampling as this method is not representative of the entire population with DFUs living in Greece, thus limiting generalizability of results. Other limitations are related to the study design, which was cross-sectional and not longitudinal, thus did not permit investigation for causal relationships between social support and patients' characteristics or changes in perceived social support over time. We did not use other measures of social support that may have provided information about other concepts associated with perceived social support such as isolation or loneliness. Finally, exploring differences in perceived social support among outpatients and hospitalized patients may yield different outcomes.

CONCLUSIONS

The present study explored factors associated with perceived social support in patients with DFUs. From the clinical point of view, knowledge about factors associated with perceived social support is an important consideration when planning individualized care. For example, the finding that adherence to medications, diet, and regular foot checks was associated with perceived social support from significant others, family, and friends may prompt health care professionals to incorporate these individuals into care planning. Data from our study underscore the need to consider enhancing social support as an important component of DFU management and may guide future interventions to determine which are most effective in enhancing socially supportive behaviors.

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