

Association between Social Support and Diabetes Burden among Elderly Patients with Diabetes: A Cross-Sectional Study from Turkey

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Abstract

Background: Elderly patients with diabetes receiving social support are likely to have better compliance with their disease self-care. However, no previous study from Turkey has assessed the effect of social support on diabetes burden among elderly patients.

Objective: The objective of this study was to assess the association between social support and disease burden among elderly patients with diabetes in Turkey.

Materials and Methods: This cross-sectional study included 271 randomly selected elderly patients with diabetes who presented to the internal medicine and diabetes polyclinics of three state hospitals (Sindirgi State Hospital, Balikesir Ataturk State Hospital and Balikesir State Hospital) in Balikesir, Turkey, between April and November 2017. A single interviewer collected all data using a sociodemographic form, the Elderly Diabetes Burden Scale (EDBS) and the Multidimensional Scale of Perceived Social Support (MSPSS). Data were analyzed using arithmetic averages, percentages and Pearson's correlation.

Results: The mean age of the participants was 72 ± 5.2 (65–88) years, and most (53.6%) were females and lived with their family: spouse (58.3%), children (18.5%) or both (17.7%). The mean EDBS score was 35.21 ± 6.94 (25–69), and the mean MSPSS score was 67.81 ± 17.33 (12–112). A significant negative correlation was found between the mean total of both assessment tools ($P < 0.05$), indicating diabetes burden was higher among those with lower social support. A similar significant correlation was observed between symptom burden, social burden, burden of dietary restrictions, burden by tablets or insulin and the total EDBS score.

Conclusion: This study found that in Balikesir, Turkey, social support for elderly patients with diabetes was mostly provided by their families and that their diabetes burden decreased with increased social support levels.

Keywords: Burden, diabetes, elderly, family, social support, Turkey

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INTRODUCTION

Diabetes is a global epidemic affecting about 422 million people worldwide. Between 1980 and 2014, global prevalence among adults aged ≥ 18 years increased from 4.7% to 8.5%.^[1] In the Middle East, economic development and a consequent adoption of Western lifestyle have caused a rapid increase in diabetes, resulting in Saudi Arabia (23.9%), Kuwait (23.1%) and Qatar (22.9%) being among the top ten countries in the world with regard to prevalence of diabetes mellitus in the population aged 20–79 years.^[2]

The likeliness of diabetes increases with age (up to the age of 65 years), and several countries with an aging adult population have observed an age-associated increase in diabetes.^[3,4] An aging population coupled with increased life expectancy has resulted in the leading cause of death to change from infectious to chronic noncommunicable diseases. In Turkey, heart diseases are the major chronic illness affecting the elderly followed by cancer, degenerative diseases and diabetes.^[5] The Turkish population aged ≥ 65 years was 8.5% in 2016 and is expected to increase to 10.8% in 2023 and 20.3% in 2050. The prevalence of diabetes is 16.5% in the overall population of Turkey, but increases to approximately 32% in the elderly population.^[6–8] The aging population of Turkey is expected to correlate with a higher incidence of diabetes, thereby increasing the economic, social and structural burden of the disease.^[6,8]

In the management of elderly patients with diabetes, the main purpose is to improve their physical, psychological and social well-being as well as prevent the progression of diabetic microvascular and macrovascular complications. However, this population is at a higher risk of developing complications compared with the adult population because of high prevalence of comorbidities, polypharmacy, cognitive impairment and the use of agents that interfere with glucose metabolism. These complications are a significant cause of increased morbidity and mortality among elderly with diabetes. In addition, comorbidities and impaired functioning in elderly patients with diabetes can contribute to significant diabetes burden.^[9,10]

In recent years, the use of “social support” has received greater attention in diabetes care;^[11] formal and informal individualized attention to meet complex diabetes self-care regimens, such as social support, can have a significantly positive role in adherence to self-care.^[11–13] The importance of social support in diabetes management has been recognized among elderly.^[14,15] Studies have shown that

elderly patients with diabetes who receive social support from family members and friends are likely to have better compliance with diabetic self-care activities, and thus have improved clinical outcomes.^[13,16,17] Moreover, social support can also have a significant effect in improving diabetes-specific quality of life and well-being among elderly patients with diabetes.^[14,16,18,19] However, only few studies have been conducted investigating the association between social support and diabetes burden in elderly patients with diabetes,^[19,20] and to the best of our knowledge, no such study has been conducted in Turkey. Therefore, the aim of this study was to assess the association between social support and disease burden among elderly patients with diabetes in Turkey.

MATERIALS AND METHODS

This cross-sectional survey included elderly patients with diabetes who presented to the internal medicine and diabetes polyclinics of three state hospitals (Sindirgi State Hospital, Balıkesir Atatürk State Hospital, and Balıkesir State Hospital) situated in Balıkesir, Turkey, between April and November 2017.

Study participants

The sample size of the research was calculated using Epi Info version 6 (CDC, Atlanta, GA, USA).^[21] According to the diabetes program of Turkey (2015–2020),^[7] the prevalence of diabetes among the elderly population is 32%. Odds ratio was used to determine the strength of association and was reported with 95% confidence interval, 5% deviation and 32% prevalence. From these, the minimum required sample size with a 95% confidence interval was calculated to be 271, and the maximum sample size was 680. During the study, about 1400 elderly patients with diabetes presented to the three hospitals. Of these, through simple random sampling, 271 patients who agreed to participate were included in this study.

The inclusion criteria were as follows: aged ≥ 65 years, a confirmed diagnosis of diabetes, no eyesight and hearing problems, able to establish verbal communications and a score of ≥ 24 points on the Mini-Mental Status examination (MMSE).^[22] MMSE is a tool for systematically and thoroughly grading the mental state of patients. It comprises 11 questions that test five areas of cognitive function: orientation, registration, attention and calculation, recall and language. The maximum score is 30, and a score of ≤ 23 is indicative of cognitive impairment.^[22] As MMSE takes only 5–10 min to administer, it is practical for repeated and routine use. For this study, the authors used the Turkish version of MMSE, which has been shown

to high reliability and validity for the diagnosis of mild dementia in the Turkish population.^[23]

Data collection

Data were collected by the first author through face-to-face interviews using a sociodemographic form, the elderly diabetes burden scale (EDBS)^[9] and the Multidimensional Scale of Perceived Social Support (MSPSS).^[24] Each interview took approximately 30 min.

Sociodemographic form

The sociodemographic form elicited personal information such as age, gender, medical history, type of diabetes mellitus, duration and complication of diabetes mellitus.

Elderly diabetes burden scale

EDBS is a 22-item, four-point multiple choice scale comprising six subscales: symptom burden (4 items), social burden (5 items), burden from dietary restrictions (4 items), anxiety about diabetes (4 items), treatment dissatisfaction (2 items) and burden by tablets or insulin (3 items). In this scale, higher scores indicate a stronger level of diabetic burden.^[9,25] The Turkish version of the EDDBS was tested by Usta-Yıldırım and Esen,^[25] who found the internal consistency (Cronbach' alpha) to be 0.92.

Multidimensional scale of perceived social support

MSPSS is a 12-item tool to assess social support and comprises three subscales: family, friends and significant other. Each subscale includes four items, and each item is rated on a 7-point Likert-type scale, where 1 = very strongly disagree and 7 = very strongly agree, and thus higher overall scores indicate a better level of social support.^[24] The Turkish version of the MSPSS was tested by Eker *et al.*,^[26] who found the internal consistency (Cronbach' alpha) to be 0.89.

Statistical analysis

Data were analyzed using SPSS version 15.0 (SPSS Inc., Chicago, IL, USA). Sociodemographic characteristics and scores of scales were examined using arithmetic averages, percentages and standard deviation. Pearson's correlation analysis was used to examine the association between EDDBS and MSPSS variables. $P < 0.05$ was considered statistically significant.

Ethical considerations

The study was conducted after obtaining approval from the Research Ethics Committee of Manisa Celal Bayar University, Manisa, Turkey (Ref. no.: 21/12/2016/20.478.486-417). Participants were informed about the study's purpose, procedural details, their right and potential benefits and risks of the study. All participants were only included after they provided written consent forms.

RESULTS

Sociodemographic and clinical characteristics of the sample

The mean age of the participants was 72 ± 5.2 years (age range: 65–88 years), and the majority were women (53.9%). Of the 271 elderly patients with diabetes who were interviewed, 95.9% had type II diabetes, and 37.3% had a mean diabetes duration of 1–5 years. Further, 32.5% of the participants had been under insulin treatment. Table 1 shows sociodemographic and diabetes characteristics of the participants. For social support, most participants had family members: spouse (58.3%), children (18.5%) or both spouse and children (17.7%). Table 2 shows the metabolic control parameters; 82.3% of participants had a mean HbA1c $\geq 8\%$ and 50.6% had retinopathy.

Mean scores of the data collection tools

The mean score of EDDBS was 35.21 ± 6.94 (25–69); Table 3 shows the mean scores of all six subscales. For MSPSS, the mean score was 67.81 ± 17.33 (12–84); Table 4 summarizes the mean scores for each subscale.

Table 1: Sociodemographic and diabetes characteristics of the elderly patients with diabetes (n = 271)

Characteristics	n (%)
Gender	
Female	146 (53.9)
Male	125 (46.1)
Marital status	
Married	169 (62.4)
Single	102 (37.6)
Living with	
Spouse	158 (58.3)
Children	50 (18.5)
Spouse and children	48 (17.7)
Alone	13 (4.8)
Other	2 (0.7)
Comorbid chronic illness	
No	58 (21.4)
Yes	213 (78.6)
Duration of diabetes (years)	
<1	25 (9.2)
1-5	101 (37.3)
6-10	94 (34.7)
≥ 11	51 (18.8)
Type of diabetes	
Type 1	11 (4.1)
Type 2	260 (95.9)
Treatment	
Insulin	88 (32.5)
Insulin + OHD	43 (15.9)
OHD	140 (51.7)
Treatment adherence	
Good	267 (98.5)
Poor	4 (1.5)
Regular diabetic examination	
Yes	264 (98.5)
No	7 (2.6)

OHD – Oral hypoglycemic drug

Table 2: Metabolic control parameters of the elderly patients with diabetes (n = 271)

Metabolic control parameters	n (%)
HbA1c value (%)	
<7	48 (17.7)
≥8	223 (82.3)
Fasting glucose (mg/dl)	
>130	120 (44.3)
80-130	151 (55.7)
Postprandial glucose (mg/dl)	
>160	126 (46.5)
≤160	145 (53.5)
Lipid (mg/dl)	
LDL-cholesterol	
<100	85 (31.4)
≥100	186 (68.6)
HDL-cholesterol	
>50	244 (90.0)
≤50	27 (10.0)
Triglyceride	
<150	70 (25.8)
≥150	201 (74.2)
Blood pressure (mmHg)	
Systolic	
≤140	264 (97.4)
>140	7 (2.6)
Diastolic	
≤90	240 (88.6)
>90	31 (11.4)
Body mass index	
Underweight	1 (0.4)
Normal weight	11 (4.1)
Overweight	216 (79.7)
1° obese	39 (14.4)
2° obese	3 (1.1)
3° morbid obese	1 (0.4)
Hypoglycemic attack	
Yes	158 (58.3)
No	113 (41.7)
Hyperglycemic attack	
Yes	237 (87.5)
No	34 (12.5)
Retinopathy	
Yes	134 (49.4)
No	137 (50.6)
Nephropathy	
Yes	13 (4.8)
No	258 (95.2)
Peripheral neuropathy	
Yes	55 (20.3)
No	216 (79.7)

The patients were grouped according to parameters associating with diabetes based on the Guideline Diagnosis and Treatment of Diabetes Mellitus, 2017 http://www.turkendokrin.org/files/DIYABET2017_web.pdf. HbA1c – Glycated hemoglobin; LDL – Low-density lipoprotein; HDL – High-density lipoprotein

Relationship between elderly diabetes burden scale and multidimensional scale of perceived social support

A significant negative correlation was found between the mean total EDDBS and MSPSS scores ($P < 0.05$) [Table 5], indicating that diabetes burden was higher among those with lower social support. Further, there was a significantly negative correlation between symptom burden ($P < 0.05$), social burden ($P < 0.01$), burden of dietary restrictions

($P < 0.05$), burden by tablets or insulin ($P < 0.01$), total EDDBS score ($P < 0.05$) and family subscale, indicating that the impact of burden is reduced and restrictions decrease with a better level of family support. A significantly negative correlation was also found between symptom burden ($P < 0.05$), burden by tablets or insulin ($P < 0.05$) and total MSPSS score, indicating that these factors are affected by the level of social support, wherein better social support results in lower levels of burden [Table 5].

DISCUSSION

Age-related increase in diabetes and its complications have been noted in several studies.^[2,3,8,9] Elderly patients receiving social support are more likely to have better compliance with diabetic self-care activities, and consequently, improved clinical outcomes.^[13,16,17] However, despite Turkey having both an aging population and a growing rate of diabetes,^[5-7] there were no studies from here assessing the effect of social support on diabetes burden among elderly patients with diabetes. Accordingly, the current study found that in Turkey, diabetes burden among elderly patients decreased with increased levels of social support, and the main source of social support was families.

Studies have found that a significant number of elderly patients with diabetes have a high disease burden.^[27,28] However, the EDDBS score of the current study was lower than that of several other studies,^[27-29] which is likely because of differences in the study design and sample size. On the other hand, highest scores were observed for the subscale's symptom burden and burden by tablets or insulin. These findings could be explained by the fact that the majority of participants also had other chronic diseases, and thus used multiple drugs. Several studies have shown that elderly patients with diabetes have more physical symptoms than younger adults and often have high burden of symptoms.^[28-30]

Social support is defined as real or perceived social networks of family, friends and organizations that provide personal, emotional or financial help when needed.^[20,31-33] Several studies have documented a positive relationship between social support and diabetes-related health outcomes and quality of life.^[12,18,19,32,33] Therefore, social support is an essential component for good self-management behaviors, including improved diet, physical activity, blood glucose monitoring, foot inspections and medication adherence, which in turn significantly improve the clinical outcomes and may prevent long-term complications.^[13,32-34] It is also particularly important in predicting the adoption of healthy behaviors to manage diabetes.^[14,16,35] In addition, studies

Table 3: Mean scores of the Elderly Diabetes Burden Scale and subscales (n = 271)

EDBS and subscales	Mean ± SD	Minimum–maximum scores
Symptom burden	8.50 ± 1.59	2-15
Social burden	8.02 ± 3.99	5-15
Dietary restrictions	8.67 ± 2.52	4-16
Worry about diabetes	9.37 ± 2.81	4-16
Treatment dissatisfaction	3.14 ± 0.84	2-6
Burden by tablets or insulin	6.12 ± 1.82	3-12
Total EDBS	35.21 ± 6.94	25-69

SD – Standard deviation; EDBS – Elderly Diabetes Burden Scale

Table 4: Mean scores of Multidimensional Scale of Perceived Social Support and subscales (n = 271)

MSPSS and subscales	Mean ± SD	Minimum–maximum scores
Family	21.22 ± 6.78	4-28
Friends	16.00 ± 7.84	4-28
Significant other	12.58 ± 7.79	4-28
Total MSPSS score	57.81 ± 17.33	12-84

SD – Standard deviation; MSPSS – Multidimensional Scale of Perceived Social Support

Table 5: Relationship between Multidimensional Scale of Perceived Social Support Scores and the Elderly Diabetes Burden Scale Scores

EDBS and subscales	MSPSS subscales			MSPSS
	Family	Friends	Significant other	
Symptom burden				
<i>r</i>	-0.13	0.09	0.34	-0.40
<i>P</i>	0.02*	0.64	0.07	0.03*
Social burden				
<i>r</i>	-0.15	0.05	-0.01	0.10
<i>P</i>	0.009**	0.37	0.85	0.08
Dietary restrictions				
<i>r</i>	-0.11	-0.02	-0.02	0.09
<i>P</i>	0.04*	0.64	0.73	0.88
Worry about diabetes				
<i>r</i>	-0.03	-0.04	-0.02	-0.04
<i>P</i>	0.62	0.47	0.67	0.48
Treatment dissatisfaction				
<i>r</i>	-0.06	-0.10	-0.05	-0.08
<i>P</i>	0.29	0.08	0.40	0.16
Burden by tablets or insulin				
<i>r</i>	-0.13	0.09	-0.19	-0.13
<i>P</i>	0.02*	0.11	0.32	0.02*
EDBS				
<i>r</i>	-0.11	-0.24	0.14	-0.20
<i>P</i>	0.04*	0.21	0.47	0.02*

P*<0.05; *P*<0.01. *r* – Correlation coefficient; EDBS – Elderly Diabetes Burden Scale; MSPSS – Multidimensional Scale of Perceived Social Support

have demonstrated that elderly diabetic patients with involved families had greater improvements in knowledge, metabolic control and stress level compared with those without any family involvement.^[36-38]

The current study found that lower EDBS scores were significantly associated with higher social support scores in elderly patients with diabetes, i.e., the perception of diabetes burden decreased with better levels of social

support. Moreover, higher social support was significantly associated with lower symptom burden and burden by tablets or insulin. Family support was especially found to lower symptom burden, social burden, dietary restriction burden and burden by tablets or insulin. These findings are in line with that of earlier studies that showed social support plays an important role in diabetes burden and that enhanced social support was significantly associated with lower perception of diabetes burden.^[12,18,19,36]

Because social support is a complex concept that is necessary for disease management, it is important to know the type of social support elderly patients with diabetes receive and their levels of satisfaction with the same. In the current study, the majority of participants received social support from family members (spouse and children). Previous studies have shown that spousal support is the most important type of support for elderly patients with chronic diseases, including diabetes.^[12,13,37-39] Further, studies have found that the presence of social support in the form of family, friends and organizations plays a significant role in providing emotional support and assistance in self-care.^[12,13,34,35,38-40] Therefore, the availability of social support may directly affect an elderly patient's ability and capacity to adapt to changes associated with both aging and presence of chronic diseases such as diabetes. This, in turn, would help these patients in adopting healthier lifestyle choices to improve metabolic control and minimize the incidence of diabetes complications.^[17,33,34,40,41]

Although our study sample had poor glycemic control, most patients did not develop nephropathy and neuropathy. However, about half of the participants had retinopathy. Nonetheless, in the current study, good treatment adherence and regular diabetic examination were observed among the participants, likely because of the social support they received. Several studies have demonstrated that regular retinal examination and early diagnosis of diabetic retinopathy can help in prevention and timely treatment, respectively, and thus decrease the rate of blindness due to diabetes.^[42-44]

A major limitation of this study was that it only included elderly patients with diabetes from three hospitals in Balıkesir, Turkey, and thus its results may not be generalizable to all elderly patients with diabetes in Turkey.

CONCLUSION

This study found that in Balıkesir, Turkey, the main source of social support among elderly patients with diabetes was their family, especially spouse. Further, the diabetes burden

of these patients decreased with increased levels of social support. The authors recommend that for elderly patients with diabetes, health-care professionals should include family members in the health education sessions and provide them with more information regarding metabolic control and self-care activities, which would likely improve the level and quality of social support these patients receive.

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Conflicts of interest

There are no conflicts of interest.

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