






ORIGINAL ARTICLE

Alexithymia in diabetes patients: its relationship with perceived social support and glycaemic control

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Abstract

Aim and Objective: This study was conducted to assess whether there is an association between alexithymia in patients with diabetes and the levels of perceived social support and glycaemic control.

Background: In the literature, whether inadequate perceived social support is a cause or effect of alexithymia has also not been clearly explained. It is stated that it is difficult to determine from where these contradictions arise, and there is a need for more studies on this topic.

Method: This cross-sectional and correlational study included 537 patients with type 1 and type 2 diabetes. The data were collected using a Patient Information Form including the patient's HbA1c value that reflected their glycaemic control level, the Toronto Alexithymia Scale and the Multidimensional Scale of Perceived Social Support. The study was reported according to the STROBE Declaration.

Results: Among the patients with diabetes, 63.9% showed signs of alexithymia. Alexithymia had a negative relationship with perceived social support and a positive relationship with HbA1c. Additionally, it was determined that the patients who showed signs of alexithymia had lower levels of perceived social support in comparison with those who did not show such signs, whereas the HbA1c levels of the former were also higher than those of the latter. Moreover, it was found that the duration of the disease, HbA1c levels and levels of perceived social support from family and a significant other explained 30% of the total variance in the level of alexithymia.

Conclusion: Alexithymia was seen prevalently among the patients with diabetes, and it was associated with a reduced level of perceived social support and weak glycaemic control.

Relevance to clinical practice: It is recommended to provide patients with psychosocial support in the scope of holistic care and include the individuals who provide care for and support the patient in the patient's management of the disease.

KEYWORDS

alexithymia, Diabetes, glycaemic control, social support

1 | INTRODUCTION

As diabetes is a health problem whose prevalence is increasingly higher in the whole world and in Turkey, it is considered to be the epidemic of the 21st century (Yılmaz et al., 2018). In terms of reaching the goal of good glycaemic control that is recommended to be lower than 7%, diabetes requires the individual to show a special effort involving substantial lifestyle changes and adapt to their new life (American Diabetes Association, 2021; Luca et al., 2015). Furthermore, diabetes may cause psychological and social problems in patients due to the severity of the symptoms of the disease, distress caused by the treatments that are applied and complications that occur, concerns for the future, worrying that they will become dependent on others, as well as fears about body image (Bahar & Tanrıverdi, 2017). Anxiety, depression and alexithymia are among the frequently encountered psychological health problems in patients with diabetes (Avci & Kelleci, 2016; Luca et al., 2015).

Alexithymia is defined as the difficulty of the individual in recognising and defining their feelings, as well as putting these feelings into words, their tendency towards thinking tangibly, difficulty in distinguishing physical senses and emotional senses and a reduction in their imagination skills (Hintistan, 2012). Alexithymia, which was initially proposed to explain symptoms seen in psychosomatic cases, is also prevalently encountered in chronic physical diseases (Karakas et al., 2016; Martino et al., 2020). As they are not able to completely express the physical and mental symptoms in their bodies, individuals with alexithymia display different reactions consisting of somatic complaints. These individuals also face the risks of not being able to receive timely and effective treatment and care in the case of a disease (Hintistan, 2012; Marchini et al., 2018). In the literature, it has been determined that the rate of diabetes patients showing signs of alexithymia is higher in comparison with that in healthy individuals (Fares et al., 2019; Stingl et al., 2018). Alexithymia, whose prevalence increases in patients with diabetes, may make metabolic control more difficult by affecting treatment compliance and self-care negatively (Housiaux et al., 2010). Studies have revealed that the glycaemic control in patients with diabetes showing signs of alexithymia is weaker than that in those not showing these signs (Fares et al., 2019; Luca et al., 2015). Based on these considerations, determining alexithymia levels is important for patients with chronic diseases such as diabetes. Specifically, alexithymia may affect both treatment compliance and outcomes.

Alexithymia may lead to social isolation, a more restricted lifestyle and delayed behaviours of seeking help among individuals (Hintistan, 2012). Individuals showing signs of alexithymia may be shallow and superficial in their interpersonal relationships and show a tendency to avoid conflict. This situation makes it more difficult for the patient to cope with social anxiety and reduces their utilisation of social support (Karakas et al., 2016). Previous studies have reported that individuals with alexithymia are not able to utilise social support due to their cognitive and emotional shortcomings, and thus, alexithymia affects social support negatively (Madanian & Froozandeh, 2017; Nekouei et al., 2014; Shayeghian et al., 2020).

What does this paper contribute to the wider global clinical community?

1. Patients who showed signs of alexithymia had higher level of HbA1c. Therefore, alexithymia might be a significant factor in the management of diabetes and prevention of complications.
2. It is highly important to inform healthcare professionals who provide services to patients with diabetes, especially nurses, regarding alexithymia.

Nevertheless, patients with diabetes need social support in terms of disease management (Far & Jahangir, 2018). Social support is defined as a sense of psychological belonging, acceptance and help that increases the skills of individuals to better cope with stressful conditions (Mohebi et al., 2018). In this respect, social support is the most important one among the proven psychosocial factors that affect physical health outcomes. In patients with diabetes, family members, especially spouses and healthcare personnel, provide the greatest social support (Mohebi et al., 2018). Perceived social support is a key that facilitates the adaptation of patients with diabetes to the disease and the treatment. In studies, in patients with diabetes, the presence of social support becomes incentivising in their application of diabetes-specific self-care behaviours, especially dietary habits (Mohebi et al., 2018; Shao et al., 2017), affects treatment compliance positively (Madanian & Froozandeh, 2017) and thus becomes effective in achieving targeted glycaemic control outcomes (Marchini et al., 2018). Additionally, the presence of perceived social support may be a facilitator in coping with difficulties especially in relation to the treatment in patients with diabetes (Bal Yılmaz et al., 2011). On the contrary, the level of perceived social support in patients with diabetes is not sufficient (Far & Jahangir, 2018; Mnif et al., 2014; Mohebi et al., 2018). In the literature, whether inadequate perceived social support is a cause or effect of alexithymia has also not been clearly explained. It is stated that it is difficult to determine from where these contradictions arise, and there is a need for more studies on this topic (Karakas et al., 2016).

Knowing about signs of alexithymia in patients with diabetes is important for them to be able to receive effective and timely treatment and care. Defining and explaining the problems of patients accurately and appropriately provide advantages in their reception of help with their health, timely diagnosis of symptoms and their treatment and care (Hintistan, 2012). It is expected that this study will provide significant contributions to healthcare professionals and science in terms of keeping the presence of alexithymia in consideration in the disease management process of patients with diabetes, determining individuals at risk of alexithymia and understanding whether or not the presence of social support and glycaemic control are associated with alexithymia.

2 | METHOD

2.1 | Purpose and Type of Study

This study was carried out with a cross-sectional and correlational design for the purpose of determining alexithymia levels in patients with diabetes and identifying the relationship between alexithymia and levels of perceived social support and glycaemic control.

2.2 | Population and Sample

The population of the study consisted of 2,460 patients who visited the Internal Medicine Polyclinics of a research and training hospital located in the province of Istanbul in Turkey between June 2020 and April 2021 and had been diagnosed with diabetes for at least a year. The STrengthening the Reporting of OBservational studies in Epidemiology checklist was used when reporting the study results (Supplementary File 1). The minimum number of participants was determined as 383 with the method of known population [$Nt_{pq}/d^2(N-1)+t^2pq$] based on a 50% probability of encountering alexithymia in diabetic individuals, in a 95% confidence interval and at an error rate of 0.05. In this context, 537 patients with type I and type 2 diabetes who met the sampling and including criteria of the study were included. The inclusion criteria were being literate, being at or over the age of 18, having no problem in verbal communication, not having a diagnosis of bipolar disorder, eating disorders or any other significant psychological/psychiatric disease, not using antidepressant medication and agreeing to participate in the study.

2.3 | 3 Data Collection Tools

The data were collected using a Patient Information Form, the Toronto Alexithymia Scale and the Multidimensional Scale of Perceived Social Support.

Patient Information Form: This form included questions on the sociodemographic characteristics (age, sex, marital status, education and employment) and disease-related information (e.g. disease duration, form of treatment and status of regular use of medication) of the patients. The form was also used to record information on the glycosylated haemoglobin (HbA1c) levels of the patients representing their glycaemic control. Information about the values of HbA1c was obtained from the laboratory results of the patients with their consent.

Toronto Alexithymia Scale: The scale was developed by Bagby et al. (1994) to assess alexithymia that is known as the failure of the individual to be aware of and recognise their own emotions and passions. The validity and reliability of the scale in Turkish were tested by Güleç et al. (Güleç et al., 2009). The scale has three dimensions as difficulty identifying feelings, difficulty describing feelings and externally oriented thinking. The difficulty identifying feelings dimension is defined as the difficulty of the individual to identify feelings and

distinguish them from bodily senses that accompany emotional stimulation. The difficulty describing feelings dimension is defined as the difficulty of the individual to express their feelings to someone else. The externally oriented thinking dimension is defined as the presence of an extroverted cognitive structure and a weakness in the capacity of the individual in internally oriented thinking and imagination. The cut-off point of the 5-point Likert-type scale (1–5 points for each item) consisting of 20 items was determined as 61. Those who get a total score of higher than 61 in the Toronto Alexithymia Scale are considered to have alexithymia. The researchers who tested the validity and reliability of the scale found the scale's Cronbach's alpha value as 0.78 (Güleç et al., 2009). The Cronbach's alpha value of the scale was determined as 0.78 in this study.

Multidimensional Scale of Perceived Social Support (MSPSS): The scale was developed by (Zimet et al. 1988) and tested for construct validity by Eker et al. (Eker et al., 2001). The scale provides a subjective assessment of the degree of perceived social support from three different sources. The 7-point Likert-type scale consists of a total of 12 items. It has three dimensions consisting of four items each as family, friends and special person as the sources of support. The score of each dimension is calculated by adding the scores of all items under the dimension, whereas the total score in the scale is calculated by adding the scores of all three dimensions. The minimum and maximum scores possible in each dimension are 4 and 28, while these scores are 12 and 84 for the entire scale. Higher scores indicate higher levels of perceived social support. The researchers who tested the validity and reliability of the scale found the scale's Cronbach's alpha value as 0.89 (Eker et al., 2001). The Cronbach's alpha value of the scale was determined as 0.96 in this study.

2.4 | Data Collection

The data were collected by the researchers by interviewing the patients in a suitable meeting room. The researcher verbally informed the patients about the research protocol, received the verbal and written consent of the participants and applied the questionnaire forms to those who agreed to participate. The application of the questionnaire forms took 20 minutes on average. Moreover, the glycaemic control parameters of the patients with diabetes were obtained from their laboratory result documents on their measurements requested by their physician at the time of their presentation to the polyclinic.

2.5 | Evaluation of Data

The data were analysed in the SPSS 22.0 program. The normality of the distribution of the data was tested with Kolmogorov–Smirnov test, and it was determined that the data were not normally distributed. Spearman's correlation analysis was used to determine the relationships between the alexithymia levels of the patients and their perceived social support and glycaemic control levels.

Mann-Whitney U test was utilised in comparing the perceived social support and glycaemic control levels of the patients showing signs of alexithymia and those not showing these signs. Pearson correlation analysis was used in determining the relationship between perceived social support and glycaemic control levels. The Kruskal-Wallis test was used to determine the relationship between perceived social support level and diabetes type. Furthermore, multiple linear regression analysis was applied to determine the explanatory effect of some variables on alexithymia. $P < 0.05$ was accepted as statistically significant.

2.6 | Ethical approval

Before starting the study, approval was obtained from the Noninterventional Clinical Studies Ethics Committee (reference number: 2019-11/03), and written permission was received from the institution where the study would be carried out. Additionally, the objective of the study was explained to the patients with diabetes, and the patients who agreed to participate in the study provided verbal and written consent. It was also specified for the participants that their data would be used only within the scope of this study, and their absolute privacy would be ensured.

3 | 3. RESULTS

The mean age of the patients with diabetes who participated in the study was 52.90 ± 12.87 years, and 52.3% of the participants were female. Among the participants, 85.7% were married, 46.1% were literate, 34.1% were primary school and 17.7% were high school and over. 61.5% of the patients were not working at any job, and 3.4% were living alone. 30.7% of the patients were still smoking, 4.1% were consuming alcohol, and 66.3% were overweight or obese. Table 1 shows the disease-related characteristics of the patients with diabetes.

The mean Toronto Alexithymia Scale score of the participants (62.97 ± 11.20) was determined to be higher than the cut-off score of the scale. Based on this cut-off value, it was found that 63.9% of the patients displayed signs of alexithymia. The mean Multidimensional Scale of Perceived Social Support score of the participants was 55.77 ± 17.28 , where the participants had the highest level of perceived social support from their families (19.23 ± 6.43) (Table 2).

There was a significant negative relationship between the general mean score of the participants in the Toronto Alexithymia Scale and their mean scores in the general Multidimensional Scale of Perceived Social Support ($r = -0.49$), as well as its family ($r = -0.47$), friends ($r = -0.42$) and special person ($r = -0.49$) dimensions ($p < 0.01$). Similarly, all dimensions of the Toronto Alexithymia Scale also showed a significant negative relationship with all dimensions of the Multidimensional Scale of Perceived Social Support ($p < 0.01$). The mean general Toronto Alexithymia Scale score of the participants

TABLE 1 Disease-related characteristics of the participants

Characteristics	N	%
Duration of disease (year) ($X \pm SS$)	9.35 ± 7.19	
HbA1c (%)	9.98 ± 1.80	
<7	8	1.5
7-9	179	33.3
>9	350	65.2
Diabetes type		
Type 1	46	8.6
Type 2	491	91.4
Type of treatment		
Oral antidiabetic therapy	29	5.4
Insulin therapy	422	78.6
Oral antidiabetic and insulin therapy	86	16.0
Regular application of treatment		
Yes	266	49.5
Sometimes	189	35.2
No	82	15.3
Following the diet		
Yes	93	17.3
Sometimes	289	53.8
No	155	28.9
Regular exercise (20-minute walk every day, etc.)		
Yes	57	10.6
Sometimes	149	27.7
No	331	61.7
Receiving training about the disease from doctor or nurse		
Yes	291	54.2
No	246	45.8
Presence of other chronic disease		
Yes	295	54.9
No	242	45.1
Presence of complication related to diabetes		
Yes	311	57.9
No	226	42.1
Frequency of hospitalisation due to diabetes or complication for the last one		
No hospitalisation	424	79.0
Once	82	15.3
Twice and over	31	5.7
Overall health assessment		
Good	114	21.2
Moderate	337	62.8
Bad	86	16.0

was found to be significantly and positively related to their HbA1c values ($p < 0.01$) (Table 3).

The mean scores of the patients with diabetes who displayed signs of alexithymia in the family, friends and special person dimensions of

TABLE 2 Distribution of the Toronto Alexithymia Scale and Multidimensional Scale of Perceived Social Support scores of the participants

Scales	Mean±SD	n	%
Toronto Alexithymia Scale	62.97 ± 11.20		
Difficulty identifying feelings	23.55 ± 6.70		
Difficulty describing feelings	16.63 ± 4.21		
Externally oriented thinking	22.77 ± 3.68		
Alexithymia group			
No alexithymia		194	36.1
Have alexithymia		343	63.9
Multidimensional Scale of Perceived Social Support	55.77 ± 17.28		
Family	19.23 ± 6.43		
Friends	17.43 ± 6.34		
Special person	19.10 ± 5.97		

TABLE 3 Correlation between the Toronto Alexithymia Scale scores of the participants and their Multidimensional Scale of Perceived Social Support scores and HbA1c values

Scales	1	2	3	4	5	6	7	8
Toronto Alexithymia Scale								
1. General	1.00							
2. Difficulty identifying feelings	0.87**	1.00						
3. Difficulty describing feelings	0.78**	0.65**	1.00					
4. Externally oriented thinking	0.45**	0.11**	0.06	1.00				
Multidimensional Scale of Perceived Social Support								
5. General	-0.49**	-0.44**	-0.43**	-0.18**	1.00			
6. Family	-0.47**	-0.41**	-0.37**	-0.22**	0.92**	1.00		
7. Friends	-0.42**	-0.37**	-0.43**	-0.10*	0.84**	0.64**	1.00	
8. Special person	-0.49**	-0.43**	-0.38**	-0.24**	0.94**	0.91**	0.70**	1.00
Glycaemic control parameter								
9. HbA1c	0.27**	0.25**	0.24**	0.06	-0.18**	-0.14**	-0.19**	-0.16**

p* < 0.05; *p* < 0.01

TABLE 4 Comparison of the mean Multidimensional Scale of Perceived Social Support scores and HbA1c values of the participants based on their statuses of showing signs of alexithymia

	Have alexithymia (n = 343;%63.9)	No alexithymia (n = 194;%36.1)	Test
	Mean ± SD	Mean ± SD	
Multidimensional Scale of Perceived Social Support			
Family	17.06 ± 5.92	23.07 ± 5.45	Z = -10.786 P < 0.01
Friends	15.53 ± 5.31	20.79 ± 6.62	Z = -9.572 P < 0.01
Special person	17.03 ± 5.23	22.76 ± 5.43	Z = -11.260 P < 0.01
General	49.62 ± 14.73	66.63 ± 16.10	Z = -11.327 P < 0.01
HbA1c (%)	10.27 ± 1.75	9.46 ± 1.78	Z = -5.450 P < 0.01

the Multidimensional Scale of Perceived Social Support were significantly lower than those of the patients who did not display signs of alexithymia ($p < 0.01$). Additionally, the mean HbA1c value of the patients showing signs of alexithymia was significantly higher than that of the patients who did not display these signs ($p < 0.01$) (Table 4).

In the study, it was found that there was a significant negative correlation between the patients' HbA1c level and their perceived family, friend and special person support levels ($p < 0.01$). However, it was stated that diabetes type was not associated with the perception of social support ($p > 0.05$).

The results of the multiple regression analysis revealed that the patients' disease durations, their HbA1c levels and their perceived social support levels regarding family and special person were factors that significantly predicted their alexithymia levels, where these factors collectively explained 30% of the total variance in the level of alexithymia ($R = 0.56$, $R^2 = 0.308$, $F = 39.813$, $p < 0.01$). While disease duration and HbA1c level affected alexithymia levels negatively, support from family and special person affected these levels positively. In the multiple regression analysis, age, sex and type of diabetes were the excluded variables (Table 5).

4 | DISCUSSION

Alexithymia is a cognitive-emotional disorder that disrupts the adjustment, concentration, processing of feelings and the assessment of cognitive-emotional information. Therefore, individuals showing signs of alexithymia are not able to manage their cognitive-emotional changes, and they are not able to cope with diseases on the desired level (Nekouei et al., 2014). This study examined the presence of alexithymia in patients with diabetes and the relationship of alexithymia with perceived social support and glycaemic control in these patients. The findings revealed that 63.9% of the patients with diabetes showed signs of alexithymia. Previous studies have reported different rates of alexithymia in patients with diabetes, and these rates have been in the range of 22.2–75.8% (Avci & Kelleci, 2016; Fares et al., 2019; Hintistan et al., 2013; Lai et al., 2019; Martino et al., 2019). It is thought that the differences in the prevalence of alexithymia in different studies might have been related to these studies' designs, measurement instruments, the sociodemographic

characteristics of their participants, geographical predictors and cultural characteristics of the samples. Moreover, in this study, the finding that approximately two-thirds of the patients with diabetes displayed signs of alexithymia was striking in terms of showing the prevalence of alexithymia. This situation carries great significance not only because it affects the capacity of patients with diabetes to manage their disease but also because it prevents their reception of effective care and treatment.

In this study, it was determined that alexithymia was negatively related to perceived social support, and the participants who showed signs of alexithymia had lower levels of perceived social support than those who did not show such signs. This finding of this study was compatible with those reported by other studies conducted with patients with diabetes (Madanian & Feroozandeh, 2017; Mnif et al., 2014). A previous study emphasised that patients showing signs of alexithymia are not able to receive sufficient social support from their families, friends and/or significant others, and this situation may lead to social isolation, a more restricted lifestyle and delayed behaviours of seeking help (Karakaş et al., 2016). As in any chronic disease, social support has a significant role also in diabetes in terms of supporting treatment and encouraging treatment-related behaviours (Bal Yılmaz et al., 2011). However, alexithymia paves the way for weakened interpersonal skills and failure to receive social support in individuals as a result of disrupting their emotional intelligence (Nekouei et al., 2014). Such that, the lack of skills to identify and describe feelings leads to a decrease in the individual's perceived social support. Additionally, the individual's failure to identify the feelings of others and respond to these feelings appropriately may also limit social support (Shayeghian et al., 2020). The finding of this study also showed that alexithymia is a significant variable that needs to be assessed in terms of its relationship to perceived social support.

One of the important goals in diabetes management is keeping HbA1c, which is a parameter of glycaemic control, on normal levels. However, several psychological and social factors including alexithymia play varying roles in the achievement of glycaemic control (Avci & Kelleci, 2016; Shayeghian et al., 2020). In this study, it was found that the alexithymia levels of the participants were positively related to their HbA1c levels, and those who showed signs of alexithymia had higher HbA1c levels. In parallel

TABLE 5 Stepwise multiple regression analysis of predictors of alexithymia levels

Variables	B	SE	β	t	P value	95% CI
Age	-0.028	0.037	-0.032	-0.767	0.443	-0.100, 0.040
Duration of disease	0.171	0.068	0.110	2.503	0.013*	0.037, 0.304
HbA1c	0.930	0.236	0.151	3.940	$P < 0.01$	0.466, 1.393
Family	-0.286	0.097	-0.162	-2.945	0.003**	-0.477, 0.095
Friends	-0.254	0.159	-0.146	-1.596	0.111	-0.567, 0.059
Special person	-0.399	0.194	-0.212	-2.059	0.040*	-0.781, -0.018
$R = 0.56$, $R^2 = 0.308$, $F = 39.813$, $p < 0.01$						

* $p < 0.05$; CI: confidence interval

with this study, many previous studies have also determined that the glycaemic control of patients showing signs of alexithymia is weaker (Avci & Kelleci, 2016; Fares et al., 2019; Luca et al., 2015; Madanian & Froozandeh, 2017). Housiaux et al. (2010) similarly observed that a one-point increase in difficulty identifying feelings, which is a dimension of alexithymia, was associated with a 0.14-point increase in the level of HbA1c (Housiaux et al., 2010). As opposed to these studies, some others have found no significant relationship between the alexithymia and glycaemic control levels of patients with diabetes (Hintistan et al., 2013; Mnif et al., 2014). These different findings of different studies in the literature may have been caused by the characteristics of their samples and differences in their measurement instruments. Furthermore, it was seen in this study that the glycaemic control in almost all patients with diabetes was not on the desired level. Considering this issue, it is thought that a disruption may occur in cognitive processes in relation to long-term hyperglycaemia, and this situation may lead to the emergence of signs of alexithymia in these individuals. In addition to this, it is possible for patients displaying signs of alexithymia to experience stress due to the disruption in their interpersonal relationships, and this stress may result in hyperglycaemia, and thus, weakened glycaemic control. When considered from this point of view, it may be important to prefer practices such as diabetes school, which primarily includes patient education that will provide glycaemic control. Studies have shown that diabetes education programmes make a positive contribution to the diabetes management of patients (Adolfsson et al., 2007; Ellis et al., 2004; Zheng et al., 2019).

In the study, it was seen that there was a negative relationship between the level of glycaemic control and the perceived social support. This finding is in similar with the literature (Madianian & Froozandeh, 2017; Mohebi et al., 2018). Also, Shayeghian et al., (2020) showed that the perception of social support explained 23% of the variance of the HbA1c. It is especially important to strengthen the perception of social support in improving diabetes management and glycaemic control, which interact with parameters such as diet and psychological health.

It was found that the type of diabetes is not associated with the perception of social support. Despite this result, there are different findings in the literature. Hempler et al. (2016) showed that in their study patient with type 2 diabetes spent less time with family and friends than patient with type 1 diabetes. Another study found that patient with type 1 diabetes had no association between perceived friend and special person support compared to patient with type 2 diabetes, but patient with type 1 diabetes had higher perceived family support (Karakurt et al., 2013). Type 1 and type 2 diabetes may affect social support in different ways, although it causes major changes in daily life. Patient with type 1 diabetes who use insulin from a tender age and follow a strict treatment regimen may have achieved disease management with family support (Hempler et al., 2016). In this study, the lack of a relationship between diabetes type and social support perception may have been due to the difference in the number of patients with type 1 and type 2 diabetes.

In this study, it was determined that disease duration and HbA1c levels affected alexithymia levels negatively, perceived social support from family and special person affected these levels positively, and all these variables explained 30% of the total variance in alexithymia levels. In another study conducted on patients with type 2 diabetes, it was seen that perceived support explained 23% of the total variance in HbA1c levels, whereas this rate increased to 31% when alexithymia was added as another variable. In the same study, alexithymia was identified to have a moderate effect on the relationship between perceived social support and HbA1c levels (Shayeghian et al., 2020). These findings obtained in a limited scope in the literature have shown that there is a relationship between alexithymia levels and perceived social support and HbA1c levels. These parameters which affect the quality of life in diabetes in addition to disease adjustment and treatment compliance are, in fact, modifiable and controllable parameters. It may be possible for healthcare professionals to create a positive effect on glycaemic control by strengthening perceived social support in patients with diabetes and reduce the probability of alexithymia development with this positive effect.

4.1 | Limitations of the study

This study is the only study conducted in Turkey to investigate the relationship between alexithymia in patients with diabetes and these patients' perceived social support and glycaemic control levels in a broad population. This study also provides a different perspective on the achievement of glycaemic control in parallel with the increased prevalence of diabetes. However, this study had a few limitations. The most important limitation of this study was that it was conducted within a certain time interval, at a single institution and with patients visiting this institution due to diabetes, and thus, the results of this study may not be generalised. The second limitation of this study was that the information gathered on the levels of alexithymia and perceived social support among the participants was based on the self-reports of these participants. Another limitation was that this study explained only the relationship between alexithymia and the variables of perceived social support and glycaemic control due to its cross-sectional design. Longitudinal studies may provide more information on the underlying mechanisms of the relationships identified in this study.

5 | CONCLUSION

In this study, it was observed that alexithymia, which is an important psychosocial condition, was seen prevalently among the diabetes patients included in the study, and it was associated with reduced perceived social support levels and weaker glycaemic control. These findings revealed that alexithymia is a significant factor in the management of diabetes and prevention of complications. In this context, it is highly important to inform healthcare professionals who provide services to patients with diabetes, regarding alexithymia. When the patient is admitted to the outpatient clinic for the

first time, alexithymia is evaluated with scales at least once a year. Essential social support may be provided according to the evaluation result; such as patient and family education, case discussion with the diabetes team, consultation with liaison psychiatry when necessary. Also, nurses can organise supportive approaches in the patient school where patients can express their feelings, and they are responsible for organising of the school, including patients in training, teaching and following up. Within the scope of holistic care, for nurses to be able to provide the psychosocial support needed by patients, they need to be able to identify these patients' problems related to understanding and expressing their thoughts and feelings and have knowledge about the effects of mobilising the social support systems of patients in the solution of these problems.

6 | RELEVANCE TO CLINICAL PRACTICE

Nurses can organise programmes such as patient schools where nurses convey patients with diabetes may express their feelings by nurses, as well as inclusion of individuals who are providing the patient with care and support in these programmes. 'Turkey Diabetes Prevention and Control Program' which was constituted for the first time in Turkey in 2015 by the Ministry of Health and prepared for the management of the diseases of individuals with diabetes in public hospitals. Within the scope of this program, it was emphasised that encouraging approaches and social activities could be included in the diabetes school in terms of recognising and expressing the emotions of the patients. In addition, it was stated that these practices should be implemented in all health institutions. Also, it may contribute to the improvement of the patients in terms of cognitive and social support and recognition of the emotional and support-related needs of the patients by their social support systems. In addition to these, implementation of individual or group-based psychological support approaches for patients with diabetes who find it difficult to express their feelings and have limited communication in each health follow-up of theirs may be effective in eliminating the negative effects of alexithymia. Finally, it is recommended to conduct field studies with larger samples to be able to better explain the causality relationship between alexithymia in patients with diabetes and these patients' perceived social support and glycaemic control levels, control for confounding variables and generalise the results to society.

DECLARATION OF CONFLICTING INTERESTS

The authors declared that there is no conflict of interest.

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ETHIC

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AUTHOR CONTRIBUTIONS

SC involved in study design. SYC and EB involved in data collection. SC and FTY involved in manuscript writing. FTY involved in statistical analyses. SC and GA involved in manuscript preparation and final approval.

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SUPPORTING INFORMATION

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