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ORIGINAL ARTICLE

EXPLORING THE RELATIONSHIP BETWEEN HOPELESSNESS AND DISABILITY IN ELDERLY INDIVIDUALS WITH DIABETES

Abstract

Introduction: This study aimed to investigate the association between hopelessness and disability in elderly individuals with diabetes.

Materials and Method: The study involved 500 elderly patients diagnosed with diabetes who were registered with family health centers. Data were collected via the Socio-demographic Information Questionnaire, the Beck Hopelessness Scale, and the Brief Disability Questionnaire. Analysis methods included calculating numbers, percentages, means, standard deviations, and conducting correlation and regression analyses. The statistical significance level was accepted as $p < 0.05$.

Results: The mean age of the participants was 70.98 ± 6.63 years. On the Beck Hopelessness Scale, participants scored an average of 9.93 ± 1.48 total points, while on the Brief Disability Questionnaire, they scored 12.27 ± 5.43 total points. It was found that 90.4% of the participants had a disability, with 50.8% classified as having a severe disability. There was a statistically significant difference between disability and various factors including gender, cohabitation status, educational attainment, employment status, income level, duration of diabetes, and the presence of other chronic diseases ($p < 0.05$).

Conclusion: The study findings revealed that participants had a moderate level of hopelessness, with only a small proportion having no disability, while approximately half of the participants experienced severe disability. Additionally, a very weak positive relationship was observed between participants' disability levels and their scores on the Beck Hopelessness Scale ($p = 0.005$). Based on these results, suggestions were formulated to address the implications of the findings in the study.

Keywords: Cognitive Dysfunction; Diabetes Mellitus; Aged.

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INTRODUCTION

Diabetes is a chronic illness resulting from either insufficient insulin production by the pancreas or ineffective utilization of the insulin produced by the body. Insulin, a hormone responsible for regulating blood sugar levels, plays a crucial role in this process. Prolonged periods of uncontrolled diabetes often lead to hyperglycemia, characterized by elevated blood sugar levels, which can inflict significant harm on various bodily systems, particularly the nerves and blood vessels (1). The population growth rate around the world has also caused an increase in urbanization, unbalanced nutrition, obesity, and aging; Consequently, the incidence of diabetes is on the rise as well (2). According to the International Diabetes Federation, 463 million people (adults aged 20–79 years) worldwide had type 2 diabetes in 2019, and this number is expected to rise to 700 million by 2045 (3). After being diagnosed with diabetes, patients may experience difficulties in maintaining metabolic control because of the adaptation problems they experience with diabetes, and they may also experience social and psychological problems (4, 5). The prevalence of depressive and anxiety symptoms in adults with type 2 diabetes in China was 56.1% and 43.6%, respectively (5). Enhancing hope levels in individuals with diabetes leads to better coping mechanisms for both physical and psychological complications. Moreover, it fosters improved adaptation to the treatment process, acceptance of their disease status, and overall increased happiness in life (6). Beck (1985) defines hopelessness as the basis of depression in his cognitive theory. Since feelings such as helplessness, worthlessness, indecision, the inability to take action, guilt and suicidal ideation can be observed alongside hopelessness, the susceptibility to depression increases (7). As a result, it can be concluded that as depression increases in individuals with diabetes, the level of hopelessness may also increase in direct proportion. According to the results of several studies, depression is one of the most common mental problems in individuals with diabetes (5). Some studies have indicated that individuals with chronic conditions such as diabetes, as well as those experiencing disabilities, tend to exhibit higher levels of hopelessness (8). Regarding the consequences of disability among the elderly, it adversely impacts public health, diminishes the quality of daily life activities, and elevates healthcare expenditures (9). Moreover, disability leads to the loss of independence, decreased quality of life and increased use of health services (10), which can precipitate mental problems in individuals. The prevalence of disability is expected to rise within the population and is projected to persist until the 2060s (11).

The primary objective of this study was to assess the levels of hopelessness among individuals with diabetes and associated conditions, as well as to examine the disability factors influencing their mental well-being. Based on the findings, healthcare professionals can offer targeted counseling and guidance to individuals with diabetes, focusing on addressing mental health concerns. Recommendations pertaining to the psychological effects of diabetes can be formulated, and educational programs can be designed to provide support and resources. Furthermore, it is envisaged that this research will serve as a groundwork for future experimental studies in this area.

Research Questions

- What are the participants' levels of hopelessness and disability?
- Do the socio-demographic data and hopelessness levels of the patients have an effect on disability?
- Is there a relationship between the participants' levels of hopelessness and levels of disability?

MATERIALS AND METHODS

Population and Sample: The population of the study consisted of elderly individuals with diabetes aged 65 years and over who were registered with family health centers affiliated with the Kars Central Community Health Center. A total of 500 participants were included in the study, and no specific sampling calculation was conducted.

Data Collection Tools: The study questionnaire consisted of three parts: the Socio-demographic Information Questionnaire, the Beck Hopelessness Scale and the Brief Disability Questionnaire.

Socio-demographic Information

Questionnaire: This questionnaire was developed by the researcher by reviewing the literature. The questionnaire included participant information such as gender, age, marital status, the presence of children, cohabitation, education level, employment status, perception of income level, years living with diabetes and the presence of chronic diseases other than diabetes (12, 13).

Beck Hopelessness Scale (BHS): The BHS was developed by Beck et al. (1974), and the Turkish validity and reliability was conducted by Seber et al. (1993). The scale consists of 20 articles, which are scored between 0 and 1. The score interval varies between 0 and 20. An increase in the scores is interpreted as a high level of hopelessness in the participant. The Cronbach alpha coefficient of the BHS was 0.86 (14,15). In this study, Cronbach's alpha value was calculated as 0.91.

Brief Disability Questionnaire (BDQ): The BDQ was developed by Stewart in 1988 to assess physical and social disability. The validity and reliability study of the BDQ in Turkey is conducted by Kaplan (1995) and it consists of 11 questions. Scores obtained from the scale vary between 0 and 22. Scores ranging from zero to four points indicated "no disability", 5-7 points indicated "mild disability", 8-12 points were considered as "moderate disability" and 13 and above points indicated "severe disability" (16,17). In this study, Cronbach's alpha value was calculated as 0.884.

Data Collection Process: After receiving approval from the ethics committee and obtaining the necessary permissions from the family health centers, the data were collected via the face-to-face interview method and the online (online, via Google forms) questionnaire method at the family health centers.

Data Evaluation: The data were evaluated using the SPSS 26.0 software program. Descriptive statistical methods (number, percentage, mean, and standard deviation), parametric tests, and correlation and linear regression analyses were used in the evaluation of the data.

Limitations: The research encountered challenges in accessing individuals with diabetes, primarily due to the constraints imposed by the Covid-19 pandemic. Special efforts were made to contact participants via telephone, particularly considering that elderly individuals often lack access to android phones or may not be active internet users. However, these efforts resulted in data loss and prolonged the data collection process. The research was constrained by the dimensions measured by the instruments used and the outcomes of the participants in the study. Therefore, the results cannot be generalized to all individuals.

Strengths of the Study: No studies could be found that addressed hopelessness and disability in elderly diabetes patients during the Covid-19 pandemic. One of the strengths of the study is the establishment of a data network representing the country during the pandemic, contributing to the literature.

Ethical Principles: In the study, ethics committee permission was obtained from the chairmanship of the non-invasive studies ethics committee of a state university with the date

02.11.2021 and decision number 81829502-903/254. Permission was obtained to use the measurement tools in the study. Only participants who agreed to participate in the study were included.

Expected Benefit from the Research: The anticipated benefits of the research include the acquisition of comprehensive socio-demographic data, along with insights into the levels of hopelessness and disability among participants with diabetes. Additional benefits include supporting the counseling of individuals in line with the results and planning effective training, and thus, improving the quality of life of individuals. Lastly, another benefit of the research will be to create a basis for future studies on individuals with diabetes.

Research Implementation Time: The research was conducted between November 2021 and May 2022.

RESULTS

In total, 500 elderly individuals with diabetes participated in this study. As shown in Table 1, among the participants, a total of 51.6% were male, 89.4% were married, 84.4% had children, 69% lived with their spouses and children, 43.4% were primary/secondary school graduates, 66% were unemployed, 81.4% had a middle-level income, 42% had diabetes for six to 10 years and 54.8% had chronic diseases other than diabetes. The mean age of the participants was 70.98±6.63 years. In the last month, the participants were absent from work for an average of 8.00±8.48 days due to disability and spent an average of 8.66±7.94 days in bed due to illness or injury.

As shown in Table 2, the participants obtained 9.93±1.48 points on the Beck Ho pelessness Scale (BHS) and 12.27±5.43 points on the Behavioral Dysfunction Questionnaire (BDQ).

Most of the participants had a disability (90.4%), and a total of 50.8% of the participants had a severe disability (Table 3).

Table 4 demonstrates the results of the multiple regression analysis between the participants' level of disability and their socio-demographic data. In the regression analysis of the level of disability of the participants, the main variables were age, the number of days of disruption of daily tasks in the last month, the number of days spent in bed in the last month due to illness or injury, gender, cohabitants, income level, diabetes duration and the presence of chronic diseases other than diabetes mellitus ($p<0.001$). The analysis results revealed that the model was significant (F: 23.896; $p<0.001$). The adjusted R2 value was 0.408, and the explanatory power of the model was 40.8%. The level of disability of the participants was affected by increasing age ($\beta=0.006$), the increasing number of days of missed work in a month ($\beta=0.005$) and the increasing number of days in bed in a month ($\beta=0.020$). In addition, being female ($\beta=0.091$), living with relatives ($\beta=0.005$) or others ($\beta=0.005$), living with a spouse or children ($\beta=0.005$), having a medium income level ($\beta=0.122$), having diabetes for more than 11 years ($\beta=-0.289$) and having chronic diseases other than diabetes ($\beta=0.170$) were found to be 40.8% effective factors for disability ($p<0.001$). There was no statistically significant difference between the disability questionnaire and the level of hopelessness, marital status and having children in the model ($p>0.05$).

It revealed a weak positive correlation between the level of disability and the BHS ($r=0.125$; $p=0.005$). The analysis also revealed a weak positive correlation between disability and age ($r=0.307$), as well as the number of days in the last month that participants did not perform their daily tasks ($r=0.415$). Additionally, a moderate positive correlation was observed between disability and the number of days spent in bed in the last month due to illness or injury ($r=0.524$; $p<0.001$).

Table 1. Distribution of Socio-Demographic Data of the Participants (N=500)

Variables		n	%
Gender	Male	242	48.4
	Female	258	51.6
Marial Status	Married	447	89.4
	Single	53	10.6
Child Status	No	78	15.6
	Yes	422	84.4
Cohabitant	Alone	44	8.8
	With my spouse/children	345	69.0
	With relatives	96	19.2
	Other	15	3.0
Educational Background	Literate	171	34.2
	Primary/secondary school	217	43.4
	High school	83	16.6
	College/Bachelor's Degree	8	1.6
Working Condition	Employed	170	34.0
	Unemployed	330	66.0
Level of Income	Satisfactory	93	18.6
	Moderate	407	81.4
For how many years they have had diabetes	1-2 years	62	12.4
	3-5 years	143	28.6
	6-10 years	210	42.0
	11 years and above	85	17.0
Presence of chronic disease other than diabetes	Yes	274	54.8
	No	226	45.2
		Min-Max	**Mean ± SD.**
Age (in years)		65-97	70.98±6.63
In the last month, how many days in total did you skip your daily work?		0-59	8.00±8.48
How many days in total did you spend in bed in the last month due to illness or injury?		0-56	8.66±7.94

Table 2. Distribution of the BHS and the BDQ Total Scores of the Participants (N=500)

	N	Min. ± Max.	Mean ± SD.
Beck Hopelessness Scale Total Score	500	3.00±15.00	9.93±1.48
Brief Disability Questionnaire Total Score	500	0.00±22.00	12.27±5.43

Table 3. Distribution of the BDQ Findings of the Participants (N=500)

	n	%
No disability	48	9.6
Mild disability	60	12.0
Moderate disability	138	27.6
Severe disability	254	50.8

Table 4. Multiple Regression Analysis Results between the Disability Score and the Socio-demographic Characteristics of the Participants

		β	SE	t	*p*	Adj. R^2	F
Constant		0.046	0.283	0.164	**<0.001**	0.408	23.896
Age		0.006	0.003	1.915	**0.050**		
Number of days in the last month that they did not perform daily tasks		0.005	0.003	2.049	**0.041**		
Number of days spent in bed in the last month due to illness or injury		0.020	0.003	6.974	**<0.001**		
Beck Hopelessness Scale		0.019	0.012	1.568	0.118		
Gender	Male[a]	0.0	-	-	-		
	Female	0.091	0.035	2.599	0.010		
Marial status	Married	0.088	0.087	1.017	0.310		
	Single[a]	0.0	-	-	-		
Child status	Yes	-0.007	0.075	-0.096	0.924		
	No[a]	0.0	-	-	-		
Cohabitants	Alone	0.039	0.070	0.560	0.576		
	With relatives	0.115	0.052	2.210	**0.028**		
	Other	0.277	0.103	2.700	**0.007**		
	With spouse/children[a]	0.0	-	-	-		
Income level	Satisfactory[a]	0.0	-	-	-		
	Moderate	0.122	0.045	2.714	**0.007**		
For how many years they have diabetes?	1-2 years	-0.289	0.070	-4.113	**<0.001**		
	3-5 years	-0.112	0.059	-1.911	0.057		
	6-10 years	-0.078	0.052	-1.507	0.133		
	11 years and above[a]	0.0	-	-	-		
Presence of chronic disease other than diabetes	Yes	0.170	0.036	4.687	**<0.001**		
	No[a]	0.0	-	-	-		

[a]: reference value, β: regression coefficient, SE: standard error. p <0.05.

Table 5. The relationship between some variables of the participants and disability

		1	2	3	4	5
1. Age	**r**	1				
	p					
2. Number of days in the last month that they did not perform daily tasks	**r**	0.411**	1			
	p	0.000				
3. Number of days spent in bed in the last month due to illness or injury	**r**	0.330**	0.606**	1		
	p	0.000	0.000			
4. Beck Hopelessness Scale	**r**	0.095*	0.122**	0.036	1	
	p	0.034	0.006	0.427		
5. Brief Disability Questionnaire	**r**	0.307**	0.415**	0.524**	0.125**	1
	p	0.000	0.000	0.000	0.005	

* Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed)

DISCUSSION

The purpose of this study was to investigate the levels of hopelessness and disability among elderly individuals with diabetes, as well as to identify potential factors associated with these conditions. From a review of related literature, it is apparent that research on the levels of hopelessness in elderly diabetic patients is limited. In this sense, this study gains importance and is discussed in light of the available studies. In this study, the participants had moderate levels of hopelessness. According to a study conducted by Morewitz et al. (2010) on patients with diabetes, it was observed that the levels of hopelessness were higher among female patients aged over 61 compared to other patient groups (18). Ghazavi et al. (2015) found that patients with diabetes were moderately hopeful (6). In a study conducted on dialysis patients, 16% of the participants were found to experience moderate levels of hopelessness, and 32% were found to experience severe levels of hopelessness. The hopelessness levels of the participants support the findings of the study. In the study conducted by Durmuş et al. (2022) on individuals with diabetes, it was observed that hopelessness levels were below the moderate level (19). In another study, the hopelessness levels of adults diagnosed with diabetes was found to be 17.2% (12). The disparity between the findings of the current research and those of previous studies may be attributed to several factors such as the difference in the age ranges (with younger age groups in the related studies), the effective differences in the chronic disease group and the notion that advanced age and diabetes may cause hopelessness in individuals.

It was observed that a total of 90.4% of the participants with diabetes had a disability and that 50.8% had a severe disability. In addition to such high levels, according to the results of the regression analysis of this study, it was revealed that disability is especially affected by increasing age, by the increasing number of days of disrupted work in a month and by the number of days in bed in a month. With this, being female, living with relatives or others, having a middle-level income, having had diabetes for more than 11 years and having a chronic disease other than diabetes were found to be 40.8% effective factors of disability. From these results, it can be concluded that most individuals with chronic

diseases such as diabetes face disability and that this situation is related to many factors. The literature review indicated a scarcity of studies on disability among individuals with diabetes, with no recent research available on this topic. Therefore, the most recent research was discussed in this study. Rizzuto et al. (2017) found that a total of 69% of individuals with chronic diseases were severely disabled (20). It is thought that if diabetes is not under control, it will increase the risk of disability and premature death caused by diabetes (21). According to the results of a study that examined the level of disability in individuals with diabetes, disability increased as the duration of diabetes increased. According to the data of the same study, the rate of disability in individuals with diabetes for more than 10 years was determined to be 76.9% (22). In the same direction, a study conducted by Gülseren et al. (2001) revealed that individuals that had diabetes for more than 10 years had more disability than individuals that had diabetes for 10 years or less (23). The results of this study are consistent with the literature: as the duration of diabetes increased, the physical and psychological difficulties attributed to the disease may have increased the level of disability in these individuals.

In line with the literature (13,22), it was revealed that the level of disability increased as the age of the participants increased and that this increase could be associated with the increase in the duration of diabetes and the emergence of other chronic diseases with age.

In this study, having a middle-level income was found to be an effective factor of disability. In Dönmez's (2019) study on dialysis patients, it was found that people with high income levels had low disability scores. The literature review indicated that having a low-level income affects disability (24, 25).

In this study, the presence of a chronic disease other than diabetes was found to affect the level of disability of the participants. The findings of a study by Mollaoğlu and Yanmış (2018) revealed high disability levels for individuals with chronic diseases (20). In a study that examined the levels of disability in the elderly, it was observed that disability increased 2.97 times for individuals with chronic diseases (13). The findings of this study are consistent with those of the reviewed studies. Conversely, in a study conducted by Gülseren et al. (2001), the presence of chronic disease did not show a significant difference in disability (23). It can be concluded that this difference may be attributed to the average age of the participants: in this study, the average age was 70.98 years, while the average age in the other study was 58.4 years. It was observed that disability increased with advancing age.

A review of a study by Gülseren et al. (2001), which examined the effect of gender on disability levels, found that females suffered moderate to severe levels of disability compared to males (23). Consistent with the findings of the literature review, the female participants in this study were found to be an effective factor of disability.

In this study, participants with diabetes who lived with relatives or others exhibited higher levels of disability compared to participants living with their spouses or children. It is believed that this difference may be attributed to the findings that individuals who live with their first-degree family feel safer and that social support in the family had a positive effect on the level of disability. It was found that the disability levels of individuals with chronic diseases and living alone are significantly higher (20). In a study of the elderly, staying with children/relatives/caregivers was found to be an effective variable of disability (13). This study's results support the findings of the literature review.

A significant, although weak, positive relationship was observed between disability, which is one of the main research areas of this study, and hopelessness. It was found that as the disability of the participants increased, their hopelessness levels also significantly increased. Although the disability levels of the participants were high, their hopelessness levels

were found to be moderate and to affect the levels of hopelessness of individuals with diabetes, possibly because 70% of the participants lived with their families and a sense of trust and social support were provided.

CONCLUSION

The findings of this study indicated that participants exhibited a moderate level of hopelessness. Additionally, a small proportion of participants did not have a disability, while approximately half of the participants experienced a severe level of disability. The factors found to significantly affect disability in this study included gender, cohabitants, educational status, employment status, income level, duration of diabetes, and the presence of chronic diseases other than diabetes. It is recommended that interventions based on physical and psychological health include practices that specifically consider women, those who live with individuals other than their spouses and children, those who do not work, those with a middle-level income, those that have had diabetes for more than 11 years and individuals with chronic diseases other than diabetes. It is also recommended that further interventions be provided to reduce the disability level of individuals and that counseling be provided by health professionals. In recent years, there have been no studies on disabilities in individuals with diabetes in Turkey, and studies on hopelessness levels are limited worldwide. Hence, it is recommended to conduct further research focusing on prevalent chronic conditions like diabetes, particularly those allowing for psychological assessments. Experimental studies investigating aspects such as disabilities in individuals with diabetes should be emphasized, as these factors can significantly influence their well-being. The aim would be to mitigate feelings of hopelessness and enhance overall quality of life for affected individuals.

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