The effect of family support and family conflict on treatment compliance in type 2 diabetes

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ABSTRACT

Purpose: To evaluate the effect of family support and family conflict on treatment compliance of type 2 diabetes patients.

Materials/Methods: The study was conducted in the endocrinology department of a university hospital. Data were collected from 174 individuals diagnosed with Type 2 DM. Patient Identification Form, Family Support and Conflict Scale in Type 2 Diabetes, and Patient Compliance Scale in Type 2 DM Treatment were used for data collection.

Results: It was found that the increase in family support increased compliance with the treatment, and the increase in family conflict decreased the compliance to the treatment. A statistically significant difference was found between gender ($p = 0.037$), place of residence ($p < 0.001$), income level ($p < 0.001$) and compliance. A statistically significant difference was found between marital status ($p < 0.001$) and family support.

Conclusions: The increase in family support increases compliance to the treatment, the increase in family conflict decreases the compliance to the treatment.

Keywords: Family support; family conflict; treatment compliance; type 2 diabetes

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INTRODUCTION

Diabetes is a chronic disease, so it requires lifestyle changes [1]. As a result of these lifestyle changes, the patients experience many physical, emotional, and social problems. These changes are affecting not only the patients but also their families. Conflict or support from the family can come up with these changes. The experiences of patients during these changes may affect their compliance with treatment [2].

Diabetes patients have many responsibilities such as lifestyle changes, dietary restrictions, monitoring blood glucose levels, observing complications, compliance with drug administration. To adapt to these changes result in physical, social, and psychological problems such as depressive disorders, eating disorders, weak family communication, and other psychological problems. The support from family and social environment is of great importance for coping with such problems and treatment compliance [3].

Patients' relatives are the people who spend their time with the patients and their support on compliance with the treatment and daily life regulations have great importance. These relatives are often family members who are living with patients in the same house. Family members help the patients in various ways to adapt to lifestyle changes and to manage the disease. In cooperation with healthcare professionals, family members provide support in treatment compliance involving medical treatment, exercise, and diet. Thus, the attitude of the family of diabetes patients has important to provide enough support to the patients [4].

Ignerski et al. [5] reported that family conflict has important implications for improving disease outcomes. Campbell et al. [6] reported that an increase in family conflict results in poor glycemic control. A study conducted by Wild et al. [7] shows that an increase in family support leads to higher adherence to medication. Aikens et al. [8] reported that an increase in family support increases medication adherence [8]. However, there was no study in Turkey examining the effect of family support and family conflict on treatment compliance in type 2 diabetes. This study aimed to evaluate the effect of family support and family conflict levels on the compliance with the treatment in Type 2 Diabetes**.**

MATERIALS AND METHODS

The research was conducted between May and December 2019 with 174 Type 2 DM patients who applied to the endocrinology service and polyclinics of a university hospital and agreed to participate in the study. A convenience sample was used in the study. The patients who diagnosed with type 2 DM for six months and more, living with his/her family (parents, children, or spouse), do not have any cognitive disorder, older than 18 years old, and can communicate in Turkish were included in the study. The patients who do not meet inclusion criteria were excluded from the study.

Data Collection

Patient Identification Form, Family Support, and Conflict Scale in Type 2 Diabetes and Patient Compliance Scale in Type 2 DM Treatment were used to collect data of the study. Data were collected via a one-to-one interview method.

Patient Identification Form

It consists of 11 items such as the patient's age, gender, marital status, duration of illness, treatment, and Wagner classification.

Family Support and Conflict Scale in Type 2 Diabetes

The scale was developed by Charlotte Paddison [9].

This was a 5-point Likert type scale (yes, always = 5, yes, often = 4, sometimes = 3, no, not usually = 2 and no, never = 1). Family support and family conflict are evaluated separately. The highest point obtained from the sub-dimensions is 50 and the lowest point is 10. An increase in the sub-dimensions point shows that increases support or conflict. The validity and reliability study of the Turkish version of the scale was carried out by Sofulu et al. [10], and the scale was reported valid and reliable for Turkish society. Permission was obtained from Sofulu to use the scale.

Type 2 Diabetes Treatment Compliance Scale

The scale was developed by Demirtaş and Albayrak in 2017 and consists of 30 items [11]. This was a 5-point Likert type scale (Strongly agree = 1, Agree = 2, Partially agree = 3, Disagree = 4 and Strongly disagree = 5).

There are 13 positive and 17 negative attitudes on the scale. Scoring is done from 1 to 5 for positive items. Items containing negative expressions are scored upside down (from 5 to 1).

The highest score on the scale is 150 and the lowest is 30. Lower scores indicate that patient compliance to type 2 DM treatment is higher/better. In the assessment of scale total points, the scores between 30-54 show "good compliance", the scores between 55-125 show "moderate compliance" and the scores between 126-150 show "bad compliance".

The scale consists of 7 sub-dimensions; factor 1, emotional difficulties in compliance, factor 2, physical difficulties in compliance, factor 3, changing difficulties of habits in compliance, factor 4, acceptance difficulties in compliance, factor 5, awareness difficulties in compliance, factor 6, diet

difficulties in compliance and factor 7, denial difficulties in compliance. Lower scores show more positive behaviors.

Data Analysis

Data analysis was performed with IBM SPSS 25.0 package program. Descriptive data are presented in number (n), mean ± standard deviation (SD), and percentage (%). The t-test, correlation analysis, Mann Whitney U test, ANOVA, and Kruskal-Wallis were used to evaluate the differences of the mean scores of family support, family conflict, and the Type 2 Diabetes treatment compliance between the groups. Post-hoc analysis was used to determine the differences in multiple groups. After the normal distribution of data was evaluated, linear regression analysis was used to evaluate the effect of family support, family conflict on Type 2 Diabetes treatment compliance in a one-factor regression model. The level of significance was set at $p < 0.05$.

Ethics

To conduct the study, written permission was obtained from the participants, the Medical Research Ethics Committee of the Ege University (Protocol No: 19-7T/58), and the hospital. Informed consent was read and signed by all participants. All the principles of the Helsinki Declaration were followed throughout the study.

RESULTS

The mean age of patients was 60.01±14.22 years. It was found that 53.5% of the patients were male, 65.5% were single, 50.0% were living in a town, and 88.0% were primary school graduates. It was reported 77.6% of the patients that their income was equal to their expense (Table 1).

Table 1: Distribution of patients' sociodemographic characteristics

	n	**%**
Gender		
Female	81	46.6
Male	93	53.5
Marital Status		
Single	114	65.5
Married	60	34.4
Living in		
City	81	46.6
Town	87	50.0
Village	6	3.4
Income Level		
income less than expenses	15	8.6
Income equal to expenses	135	77.6
Income more than expenses	24	13.8
Education Level		
First school	153	88.0
High school	18	10.3
University	3	1.7
	Mean±SD	
Age	60.01±14.22	

It was found that 62.1% of the patients were using insulin, 63.2% were smoking, 70.7% were not consuming alcohol, 62.1% had one or more other chronic diseases, 82.8% were regularly followed up by a health professional, 77.6% were hospitalized in the last six months, 37.4% of the patients were at Wagner 0 class (Table 2).

Adherence in females was higher than in males ($p = 0.037$), and it was also higher in those living in the villages and towns ($p < 0.001$).

The highest adherence was performed in a group where total income was equal to expenses ($p < 0.001$) (Table 3).

According to the results of the regression analysis, the increase in the family support sub-dimension mean score was negatively affecting the Type 2 Diabetes treatment compliance scale. The increase in the total score of the family conflict sub-dimension mean score was positively affecting the Type 2 Diabetes treatment compliance scale (Table 4).

Table 2. Distribution of disease-related characteristics

Treatment	**n**	**%**
Insulin	108	62.1
Oral anti-diabetic	66	37.9
Smoking		
Yes	110	63.2
No	64	36.8
Alcohol Consume		
Yes	51	29.3
No	123	70.7
Other Chronic Disease(s)		
Yes	108	62.1
No	66	37.9
Regularly follow up by a health professional		
Yes	144	82.8
No	30	17.2
Hospitalization in the last 6 months		
Yes	135	77.6
No	39	22.4
***Wagner**		
0	65	37.4
1	37	21.3
2	44	25.3
3	28	16.1

*The Wagner is a diabetic foot ulcer grade classification system

Table 3. Relationship between patients' characteristics and family support, family conflict and compliance

	Family support	**Family conflict**	**Adherence**
Gender			
Female	16.04±5.87	15.88±3.62	76.00±14.41
Male	14.78±6.18	14.88±4.14	71.90±11.28
p	0.170	0.092	**0.037**
Marital Status			
Single	19.16±6.76	15.13±3.82	74.66±13.53
Married	13.37±4.54	15.46±3.99	73.35±12.68
p	**<0.001**	0.598	0.529
Living in			
City	15.28±6.48	15.33±4.12	69.37±12.12
Town	15.43±5.82	15.21±3.84	77.40±12.84
Village	15.66±3.66	17.50±1.64	81.66±2.33
p	0.980	0.390	<0.**001**
Total income			
income less than expenses	17.20±5.15	17.60±3.11	71.53±20.31
Income equal to expenses	15.60±6.43	15.00±4.16	75.83±11.60
Income more than expenses	12.91±3.11	15.91±2.16	63.83±9.80
	0.063	0.380	<0.**001**

Table 4: Regression estimates on the effect of family support and family conflict on treatment compliance

	B	**β**	**R^2**	**t**	**p**
Family support	-1.05	-0.321	0.232	-4.563	<0.001
Family conflict	0.619	0.289	0.151	4.113	<0.001
Constant	80.53	-	4.113	19.583	<0.001

Model summary: R= 0.406, R^2 = 0.165, Adjusted R^2= 0.155, F=16.901, p<0.001

DISCUSSION

Diabetes is a lifelong disease that requires a lifestyle change and therefore compliance of the patient with the treatment is important for the effectiveness of treatment. To improve compliance of diabetes patients to the treatment, factors affecting compliance should be determined. This research was conducted to evaluate the effect of family support and family conflict on compliance with the treatment in patients with Type 2 diabetes.

In this study, we found a statistically significant difference between gender and compliance to the treatment. Type 2 Diabetes treatment compliance scale mean points of males were lower than females. As the total score of the scale decreases, the compliance increases. So, this means that men have better compliance than women. Men and women have different behaviors regarding treatment compliance in diabetes and this leads to different adaptation behaviors to the disease. The traditional roles of women in Turkish society can cause a barrier to compliance with diabetes. Women may not want to adapt to the lifestyle changes they need for diabetes treatment to maintain family order. This may be the reason for women to adapt to treatment less in diabetes than men [12-18].

In the current study, a statistically significant difference was found between marital status and family support. Family support scores of singles were higher than married people. In a study conducted by Sofulu et al. [10], similarly, the family support score of singles was reported higher than the married people. In our society, while individuals' role in the family is children until they get married, they take the role of a husband or wife after marriage. As the role of individuals in the family changes, the level of family support also changes.

A statistically significant difference was found between the where the patients live, income level, and treatment compliance found that people living in the city have better compliance with the treatment than the people living in villages and towns. We also found that people whose income is higher than expenses have better compliance with the treatment than people whose income is less or equal to expenses. Income level and place of residence directly affect the compliance with the treatment health care institutions or pharmacies, which individuals can reach without difficulty in terms of material and transportation when they need them, are a facilitating factor in their compliance with treatment [19].

In our country, transportation to a health care institution is easier for people living in cities than people living in villages and towns, and it is also easier for people with a higher income than people who have lower incomes. Also, diabetes patients need to use various medical materials for their treatment. To find and buy these materials is easier for those living in the city than those living in the town and village. This may be the reason for differences between groups in our study.

We found that as family support increased, compliance to treatment increased, and as family conflict increased, compliance to treatment decreased. Each family support and family conflict, itself, is directly affecting the compliance with treatment. It is reported in the literature that perceived social support is effective in coping with stress, lifestyle changes, improving self-care behaviors, and leaving harmful habits [20-22]. We thought that this explains the relationship between family support, family conflict, and compliance with treatment.

As the social support perceived by family increases, the management of the disease becomes easier for the patients. Disease management, on the other hand, is directly related to compliance with the treatment. In other words, increased compliance is an indication that the disease is managed well. Rosland et al. [23] reported that perceived social support from family members and friends had a positive effect on disease management in diabetes.

In a meta-analysis study that investigated 122 studies, it was found that patients receiving social support were 27% more likely to compliance with the treatment [20]. The results of our study reflect the literature.

The study had some limitations; the participants were the patients who applied to the endocrinology department of a university hospital and the findings of the study are representing only this universe. Some findings of the study were based on self-reporting answers not on observation or quantitative measurements. There wasn't any comparison of the effect of family structure.

CONCLUSION

As a result, in this current study which we evaluated the effect of family support and family conflict levels on compliance with treatment in diabetes, it was concluded that family support increased compliance with the treatment, family conflict decreased compliance with the treatment, gender, marital status, place of residence, and income status were effective on compliance with treatment.

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Conflicts of interest

No conflict of interest has been declared by the authors.

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REFERENCES

1. American Diabetes Association. Standards of medical care in diabetes. 2019 Jan; 42(Suppl):S1-S194.
2. Baykal D, Orak E. The Investigation of the Family Effect on Glycemic Control of Type 2 Diabetes Mellitus Patients Istanbul Gelisım Universıty Journal Of Health Scıences 2018 Apr;4:382-61.
3. Powers MA, Bardsley J, Cypress M, Duker P, Funnel MM, Fischl AH, Maryniuk MD, Siminerio L, Vivian E. Diabetes Self-management Education and Support in Type 2 Diabetes: A Joint Position Statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics. Clin Diabetes 2016 Apr;34(2):70–80.
4. Mıller TA, Dımatteo MR. Importance of family/social support and impact on adherence to diabetic therapy. Diabetes Metab Syndr Obes. 2013 Nov;6:421-6.
5. Ingerski LM, Anderson BJ, Dolan LM, Hood KK. Blood glucose monitoring and glycemic control in adolescence: contribution of diabetes-specific responsibility and family conflict. J Adolesc Health 2010 Aug;47(2):191-7.
6. Campbell MS, Wang J, Cheng Y, Cogen FR, Streisand R, Monaghan M. Diabetes-specific family conflict and responsibility among emerging adults with type 1 diabetes. J Fam Psychol. 2019 Oct;33(7):788-96.
7. Wild SH, Hanley J, Lewis SC, McKnight JA, McCloughan LB, Padfield PL, Parker RA, Paterson M, Pinnock H, Sheikh A, McKinstry B. Supported Telemonitoring and Glycemic Control in People with Type 2 Diabetes: The Telescot Diabetes Pragmatic Multicenter Randomized Controlled Trial. PLoS Med. 2016 Jul 26;13(7):e1002098.
8. Aikens JE, Rosland AM, Piette JD. Improvements in illness self-management and psychological distress associated with telemonitoring support for adults with diabetes. Prim Care Diabetes 2015 Apr;9(2):127-34.
9. Paddison C. Family support and conflict among adults with type 2 diabetes: Development and testing of a new measure. Eur Diabetes Nurs. 2010 Mar;7(1):29 – 33.
10. Sofulu F, Unsalavdal E, Arkan B. Validity and Reliability of The Diabetes Family Support And Conflict Scale in Turkish. Acta Medica Mediterranea 2017 Jan;33:107-14.
11. Demirtas A¸ Akbayrak N. Development of an assessment scale for treatment compliance in type 2 Diabetes Mellitus in Turkish population: Psychometric evaluation. Int J Nurs Sci. 2017 Jul 10;4(3):244–51.
12. Martz DM, Handley KB, Eisler RM. The relationship between feminine gender role stress, body image, and eating disorders. Psychology of Women Quarterly 1995;19:493-508.
13. Hibbard JH, Pope CR. Gender roles illness orientation and use of medical services. Soc Sci Med. 1983;17:129-37
14. Verbrugge LM. Gender and health: an update on hypotheses and evidence. J Health Soc Behav. 1982;26:156-82.
15. Anderson RM, Fitzgerald JT, Oh MS. The relationship between diabetes- related attitudes and patient's self-reported adherence. Diabetes Edu.1993;19(4):287-92.
16. Green KE. Common illness and self-care. J Community Health 1990;15:329-38.
17. Sharpe PA, Clark NM, Janz NK. Differences in the impact and management of heart disease between older women and men. Women & Health 1991;17:25-43.
18. Yoshimura Y, Kamada C, Takahashi K, Kaimoto T, Iimuro S, Ohashi Y, Araki A, Umegaki H, Sakurai T, Ito H; Japanese Elderly Diabetes Intervention Trial Study Group. Relations of nutritional intake to age, sex and body mass index in Japanese elderly patients with type 2 diabetes: the Japanese Elderly Diabetes Intervention Trial. Geriatr Gerontol Int. 2012;12(1):29-40.
19. Houle J, Lauzier-Jobin F, Beaulieu MD, Meunier S, Coulomb S, Cote J, Lesperance F, Chiasson JL, Bherer L, Lambert J. Socioeconomic status and glycemic control in adult patients with type 2 diabetes: a mediation analysis. BMJ Open Diabetes Res Care 2016;4(1):e000184.
20. DiMatteo MR. Social support and patient adherence to medical treatment: a meta-analysis. Health Psychol. 2004;23:207–18.
21. Pereira M, Berg-Cross L, Almeida P, Machado JC. Impact of family environment and support

on adherence, metabolic control, and quality of life in adolescents with diabetes. Int J Behav Med. 2008;15:187–93.

22. Cox DJ, Gonder-Frederick L. Major developments in behavioral diabetes research. J Consult Clin Psychol. 1992;60:628–38
23. Rosland AM, Kieffer E, Israel B, Cofield M, Palmisano G, Sinco B, Spencer M, Heisler M. When is social support important? The association of family support and professional support with specific diabetes self-management behaviors. J Gen Intern Med. 2008;23:1992–9.