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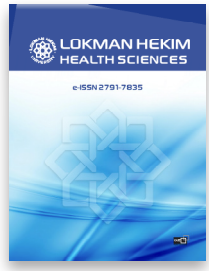

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ORIGINAL ARTICLE

Eating Attitudes, Treatment Adherence, and Obesity in Individuals with Type 2 Diabetes: A Cross-Sectional Study

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Abstract

Introduction: Type 2 diabetes mellitus (T2DM) is a complex disease that directly affects an individual's quality of life and metabolic control and is closely related not only to physiological factors but also to behavioral and psychosocial factors. This study aims to investigate the relationship between eating attitudes, treatment adherence, and obesity in individuals with T2DM.

Methods: This cross-sectional study was conducted between December 2024 and May 2025 at a state hospital in Şanlıurfa, Türkiye. The patients diagnosed with T2DM and were undergoing active treatment were participated to the study. Data collection tools included a socio-demographic information form, the Eating Attitudes Test-26, and the Assessment Scale for Treatment Compliance in T2DM; additionally, fasting blood glucose (FBG), Haemoglobin A1c test (HbA1c), and body mass index (BMI) data were evaluated.

Results: A total of 106 individuals aged 18 and over who had been diagnosed with T2DM and were undergoing active treatment participated in the study. A negative correlation was observed between eating attitudes and treatment adherence (r=-0.410, p<0.001). Restrictive eating behavior showed a positive correlation with FBG and HbA1c (r=-0.433, p<0.001; r=-0.412, p<0.001) and a negative correlation with BMI (r=0.272, p=0.005). Additionally, treatment adherence positively correlated with FBG and HbA1c (r=0.297, p=0.002; r=0.230, p=0.018).

Discussion and Conclusion: In T2DM treatment, approaches should address both biomedical indicators and individuals' eating attitudes. This study underscores the need for individualized, behavior-based interventions to enhance treatment adherence and metabolic control.

Keywords: Eating attitude; Obesity; Treatment adherence; Type 2 diabetes

Type 2 diabetes mellitus (T2DM) is a chronic metabolic disorder characterised by insulin resistance and pancreatic beta cell dysfunction, with a steadily increasing global prevalence.[1] The International Diabetes Federation (IDF) estimates that approximately 537 million people worldwide are living with diabetes as of 2023, with this number projected to reach 783 million by 2045.[2] Obesity is a major risk factor for T2DM and complicates its management.[3] However, the relationship between eating attitudes, treatment adherence, and obesity in individuals with T2DM is a complex process that directly affects the success of diabetes management.[4]

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Eating attitude refers to the cognitive, emotional, and behavioural relationship an individual has with food, and these attitudes can affect an individual's ability to maintain healthy eating habits.[5] In T2DM patients, particularly negative eating attitudes, emotional eating, uncontrolled eating, and restrictive eating—are associated with obesity, which complicates glycaemic control and reduces treatment adherence.[6,7] In particular, attitudes toward emotional eating, overeating, and dietary restrictions in individuals with T2DM can disrupt glycemic control and increase the prevalence of obesity.[8] Additionally, poor treatment adherence is associated with factors such as hypoglycaemic episodes, medication non-adherence, and non-compliance with dietary recommendations.[9]

In the management of T2DM, it is not only what the individual eats that is important, but also the psychological basis of their eating behaviour. Eating disorders and negative eating attitudes, particularly patterns such as night eating syndrome and binge eating, can disrupt the treatment process.[10,11] Additionally, these behavioural patterns can negatively affect individuals' adherence to diabetes treatment, leading to elevated Haemoglobin A1c test (HbA1c] levels.[12,13]

Understanding the relationship between eating attitudes, treatment compliance, and comorbidities like obesity is crucial for effective T2DM management and individualized treatment planning. The aim of this study was to examine the relationship between eating attitudes, treatment adherence levels and obesity in individuals with T2DM.

Materials and Methods

This cross-sectional study was conducted between December 2024 and May 2025 with patients diagnosed with T2DM who visited the diet clinic of a state hospital in Şanlıurfa. Participants were selected on a voluntary basis, and written consent was obtained prior to the start of the study.

The sample size was calculated based on 132 patients who visited the clinic in the six months prior to the start of the study; it was determined that at least 99 participants were required with a 95% confidence level and a 5% margin of error. At the end of the study, a total of 106 participants were reached, and the data collection process was completed.

The study included individuals aged 18 years and older who had been diagnosed with T2DM and were undergoing active treatment. Individuals with a history of psychiatric illness, those diagnosed with type 1 diabetes or gestational diabetes, and participants under the age of 18 were excluded.

This research has been approved by the İnönü University Health Sciences Non-Interventional Clinical Research Ethics Committee in its decision dated 15 October 2024 and numbered 2024/6497. The study was conducted in accordance with the ethical principles of the Helsinki Declaration and respect for human rights.

Data Collection Tools

A three-part questionnaire was used to collect data for the study: a socio-demographic information form, the Eating Attitudes Test-26 (EAT-26) and the assessment scale for treatment compliance in T2DM. In addition, anthropometric measurements such as height and body weight were taken by the researcher dietitian, and fasting blood glucose (FBG) and HbA1c results were obtained from patient files.

Socio-demographic Information: Participants' age, gender, income level, educational status, and smoking status were recorded through face-to-face interviews.

EAT-26: Developed by Garner and colleagues[14] and adapted to the Turkish population and language by Erguney-Okumus and Sertel-Berk,[15] this scale is used to assess individuals' eating behaviours, eating-related concerns, and negative thoughts. It is a 26-item scale consisting of three subscales (restriction, preoccupation with eating, and social pressure).

Assessment Scale for Treatment Compliance in T2DM: This scale, developed by Demirtas and Akbayrak,[16] was designed to assess adherence to T2DM treatment in Turkish society. It is a 5-point Likert-type scale consisting of seven sub-dimensions (emotional difficulties in compliance, physical difficulties in compliance, changing difficulties of habits in compliance, acceptance difficulties in compliance, awareness difficulties in compliance, diet difficulties in compliance, denial difficulties in compliance) and a total of 30 items. The total score range is 30–150, with high scores indicating low adherence (negatively correlated).

Height was measured using a Tem Eko-300 stadiometer (İstanbul, Türkiye) with ±0.1 cm accuracy, with participants standing upright and paying attention to the Frankfort horizontal plane, without shoes. Body weight was recorded using the same device, with light clothing and without shoes, with ±0.1 kg accuracy. Body Mass Index (BMI) was calculated by dividing body weight in kilograms by height in metres squared [kg/m^2].

Biochemical measurements, including fasting blood glucose (FBG) and HbA1c values, were recorded using routine laboratory results obtained from patient files.

Fasting blood glucose measurements were performed using the hexokinase method on venous blood samples taken after a minimum of 8–12 hours of fasting, and results were reported in mg/dL. HbA1c levels were analysed using high-performance liquid chromatography (HPLC) and the results were expressed as a percentage (%).

Statistical Analysis

All statistical analyses were performed using IBM SPSS Statistics for Windows, Version 25.0 (IBM Corp., Armonk, NY, USA). Heat maps and related visualisations were generated using OriginPro 2023 (Version 10.0, OriginLab Corporation, Northampton, MA, USA). Descriptive statistics, including mean, standard deviation, and percentage values, were reported. The distribution of continuous variables was examined by histogram graphs and whether the skewness and kurtosis coefficients were within the ±1.00 range, and the normality assumption was assessed using the Kolmogorov-Smirnov test. The relationships between continuous variables were tested using Pearson correlation analysis and Spearman rank correlation analysis. The correlation coefficient was interpreted as weak (0.00-0.39), moderate (0.40-0.69), and strong (0.70-1.00). A p-value of <0.05 was accepted as the level of statistical significance.

Results

A total of 106 individuals aged 18 and over who had been diagnosed with T2DM and were undergoing active treatment enrolled to the study. Table 1 presents the general characteristics of the 106 participants included in the study. The mean age was 52.11±10.82 years, mean height was 160.95±9.02 cm, mean body weight was 84.15±12.89 kg, and mean BMI was 32.68±5.77 kg/m^2. Based on BMI classifications, 36.8% of the participants were overweight, 36.1% had class 1 obesity, 17.0% had class 2 obesity, and 11.3% had class 3 obesity. The majority of participants were female (68.9%), 50.9% were illiterate, and 49.1% reported an income below their expenses. Additionally, 33.0% of participants were current smokers.

Participants' Values of the Type 2 Diabetes Treatment Compliance Scale, Eating Attitudes Test-26, and Other Measurements are presented in Table 2. Accordingly, the total score for the Type 2 Diabetes Treatment Compliance Scale was found to be 86.81±7.39, while the total score for the Eating Attitudes Test-26 was 10.86±6.32. Upon examining other measurements, the mean fasting blood glucose level was 210.07±92.88 mg/dl, the HbA1c value was 8.55±2.29, and the BMI was 32.68±5.77 kg/m^2.

Table 1. General characteristics of participants

	Mean	SD	n	%
Age	52.11	10.82		
Height	160.95	9.02		
Weight	84.15	12.89		
BMI	32.68	5.77		
BMI classification (kg/m^2)				
Underweight (<18.5)			0	0.0
Normal range (18.5–24.9)			4	3.8
Owerweight (25.0–29.9)			39	36.8
Obese-class 1 (30.0–34.9)			33	31.1
Obese-class 2 (35.0–39.9)			18	17.0
Obese-class 3 (≥40)			12	11.3
Gender				
Female			73	68.9
Male			33	31.1
Education				
Illiterate			54	50.9
Primary school			19	17.9
High school			28	26.4
University and above			5	4.7
Income				
Income and expenditure equal			41	38.7
Income less than expenditure			52	49.1
Income more than expenditure			13	12.3
Smoking				
Yes			35	33.0
None			71	67.0

SD: Standard deviation; BMI: Body Mass Index.

Nutritional Attitudes and Treatment Adherence

Findings regarding the relationship between participants' eating attitudes and treatment adherence in T2DM are presented in Figure 1. Higher scores on the treatment adherence scale and its subscales indicate lower adherence The figure shows total scores for dietary attitudes and subscales (restriction, excessive focus on food, and social pressure) as well as total scores from the Type 2 Diabetes Treatment Adherence Scale (emotional difficulties in adherence, physical difficulties in adherence, difficulties in changing habits in adherence, difficulties in acceptance in adherence, difficulties in awareness in adherence, difficulties in diet in adherence, difficulties in denial in adherence). Accordingly, there was a strong negative relationship between eating attitudes related to restriction and physical difficulties in compliance, changing difficulties of habits

Table 2. Values of the Type 2 Diabetes Treatment Compliance Scale, Eating Attitudes Test-26, and other measurements

	Mean±SD	Median (Min–Max)
Type 2 Diabetes Treatment Compliance Scale		
Emotional difficulties in compliance	23.30±3.13	23.50 (16.00–30.00)
Physical difficulties in compliance	16.39±3.34	16.00 (11.00–24.00)
Changing difficulties of habits in compliance	9.70±2.20	10.00(5.00–14.00)
Acceptance difficulties in compliance	8.77±1.73	9.00 (6.00–13.00)
Awareness difficulties in compliance	9.69±1.80	10.00 (6.00–15.00)
Diet difficulties in compliance	10.48±1.37	11.00 (6.00–13.00)
Denial difficulties in compliance	8.48±1.34	8.00 (6.00–11.00)
Type 2 diabetes treatment compliance total score	86.81±7.39	88.00 (68.00–102.00)
Eating Attitudes Test-26		
Restriction	7.59±4.92	7.00 (0.00–21.00)
Preoccupation with eating	1.63±2.43	1.00 (0.00–9.00)
Social pressure	1.63±1.98	1.00 (0.00–10.00)
Total score of eating attitudes	10.86±6.32	10.50 (0.00–38.00)
Other measurements		
FBG (mg/dL)	210.07±92.88	190.00 (105.20–493.00)
HbA1c (%)	8.55±2.29	7.85 (0.00–14.68)
BMI (kg/m^2)	32.68±5.77	31.60 (23,03-48,69)

SD: Standard deviation; Min: Minimum; Max: Maximum; FBG: Fasting blood glucose; HbA1c: Haemoglobin A1c Test, BMI: Body Mass Index.

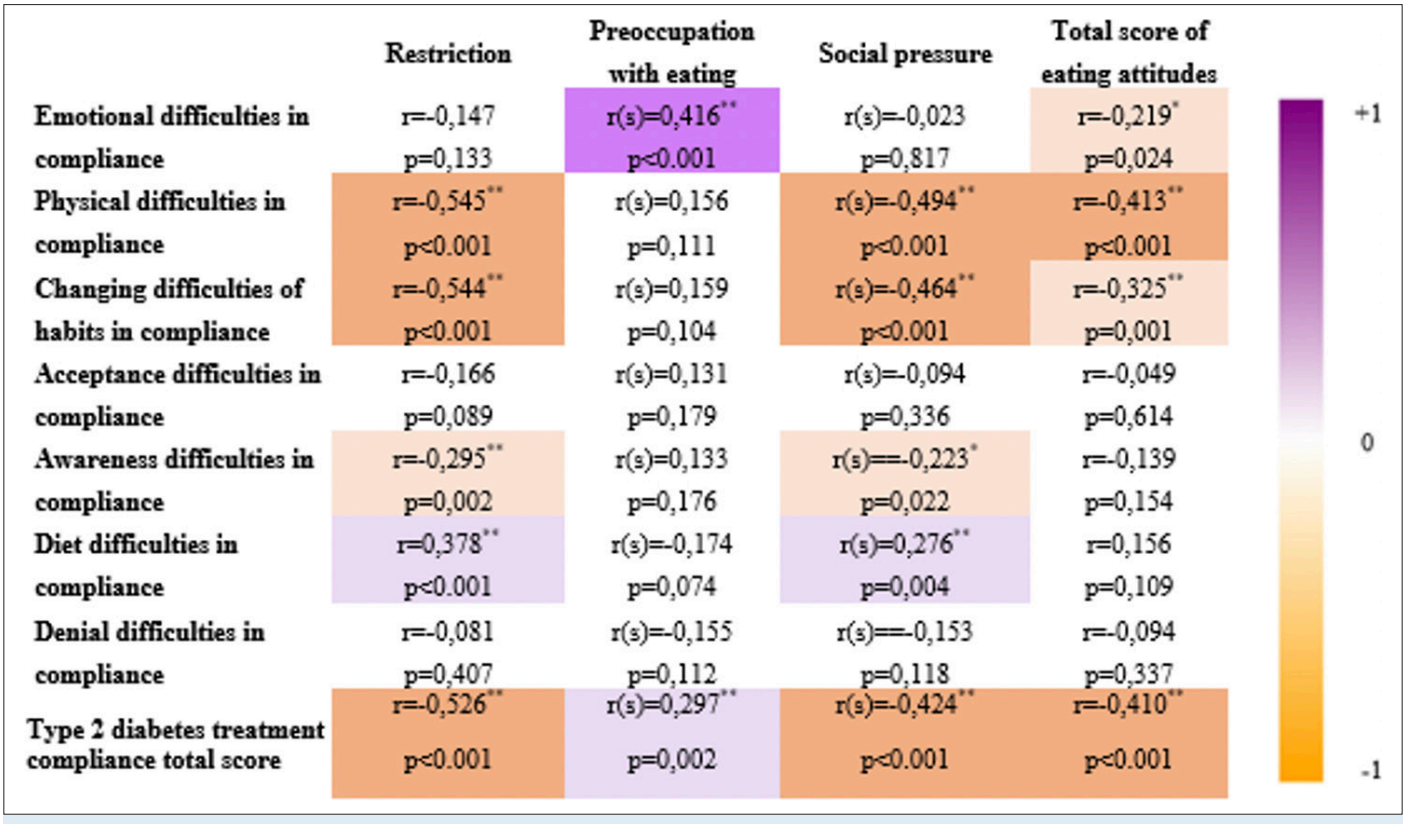

Figure 1. Relationship between participants' eating attitudes and treatment compliance.

r: Pearson correlation coefficient; r(s): Spearman's rank correlation coefficient; *: Correlation is significant at the 0.05 level; **: Correlation is significant at the 0.01 level.

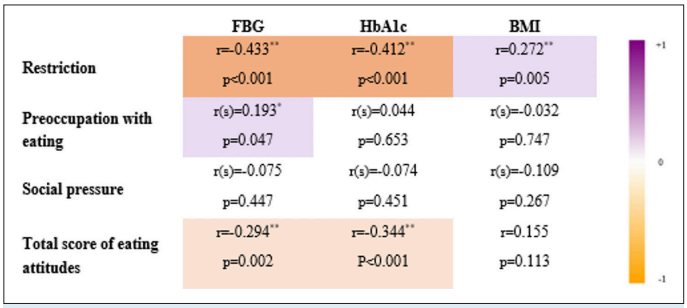

Figure 2. Relationship between participants' eating attitudes and fasting blood glucose, HbA1c, and BMI.

r: Pearson correlation coefficient; r(s): Spearman's rank correlation coefficient; *: Correlation is significant at the 0.05 level; **: Correlation is significant at the 0.01 level; FBG: Fasting blood glucose; HbA1c: Haemoglobin A1c test; BMI: Body Mass Index.

in compliance, and the assessment scale for treatment compliance in T2DM total score (r=-0.545, p<0.001; r=-0.544, p<0.001; r=-0.526, p<0.001, respectively), a weak negative correlation between awareness difficulties in compliance and diet difficulties in compliance (r=-0.295, p=0.002; r=0.378, p<0.001). A positive, moderate, statistically significant relationship was found between preoccupation with eating and emotional difficulties in compliance (r(s)=0.416, p<0.001), and a positive, weak, statistically significant relationship was found between preoccupation with eating and assessment scale for treatment compliance in T2DM total score (r(s)=0.297, p=0.002). A negative, weak, statistically significant relationship was found between social pressure with emotional difficulties in compliance and changing difficulties of habits in compliance (r=-0.219, p=0.024; r=-0.325, p=0.001), and a negative, moderately significant relationship was found between physical difficulties in compliance, and the assessment scale for treatment compliance in T2DM total score (r=-0.413, p<0.001; r=-0.410, p<0.001, respectively). Additionally, a negative, moderately significant relationship was found between the total score for eating attitudes and the physical difficulties in compliance, changing difficulties of habits in compliance and the assessment scale for treatment compliance in T2DM total score (r(s)=-0.494, p<0.001; r(s)=-0.464, p<0.001; r(s)=-0.424, p<0.001, respectively), a weak negative correlation between emotional difficulties in compliance (r(s)=-0.223, p=0.022), and a weak positive correlation between diet difficulties in compliance (r(s)=0.276, p=0.004).

Nutritional Attitudes with FBG, HbA1c and BMI

Figure 2 presents the relationships between participants' eating attitudes and FBG, HbA1c, and BMI. A moderate negative correlation was observed between FBG and restriction (r=-0.433, p<0.001), while a weak positive correlation was found with preoccupation with eating (r(s)=0.193, p=0.047). Additionally, the total eating attitude score showed a weak negative correlation with FBG (r=-0.294, p=0.002). HbA1c was moderately negatively associated with both restriction (r=-0.412, p<0.001) and the total eating attitude score (r=-0.344, p<0.001). Lastly, a weak negative correlation was found between BMI and restriction (r=-0.272, p=0.005).

Treatment Adherence with FBG, HbA1c and BMI

Figure 3 presents the relationships between treatment adherence and FBG, HbA1c, and BMI. FBG showed a weak positive correlation with emotional difficulties in compliance (r=0.271, p=0.005) and physical difficulties (r=0.313, p=0.001), while it was weakly negatively correlated with total treatment adherence score (r=-0.297, p=0.002) and diet difficulties (r=-0.245, p=0.048). HbA1c was weakly positively correlated with physical difficulties (r=0.257, p=0.008) and weakly negatively correlated with both the total treatment adherence score (r=-0.230, p=0.018) and diet difficulties (r=-0.192, p=0.048). BMI showed a weak positive correlation with diet difficulties in compliance (r=0.265, p=0.006).

Discussion

This study investigated the associations between eating attitudes, treatment adherence, and obesity in individuals with T2DM. The results indicate that multiple dimensions of eating attitudes are significantly linked to treatment adherence, suggesting that dietary behaviours play a critical role in both metabolic regulation and engagement with the treatment process.

The findings demonstrated that greater eating restriction tendencies were significantly associated with improved treatment adherence, particularly in the domains of physical, acceptance, and awareness-related difficulties. This suggests that restrictive eating attitudes may facilitate a more structured and conscious approach to the treatment process. These results are consistent with previous studies; for instance, Akca and Senturk,[17] reported that individuals with positive eating attitudes exhibited higher adherence to diabetes treatment. However, as eating preoccupation increased, a significant decrease was observed in overall treatment compliance and in the 'emotional difficulties in compliance' dimension. This finding suggests that excessive focus on eating behaviour–possibly within the framework of obsessive tendencies – may increase stress and anxiety during the treatment process, thereby reducing compliance levels. Similarly, Yannakoulia,[18] found that external dietary

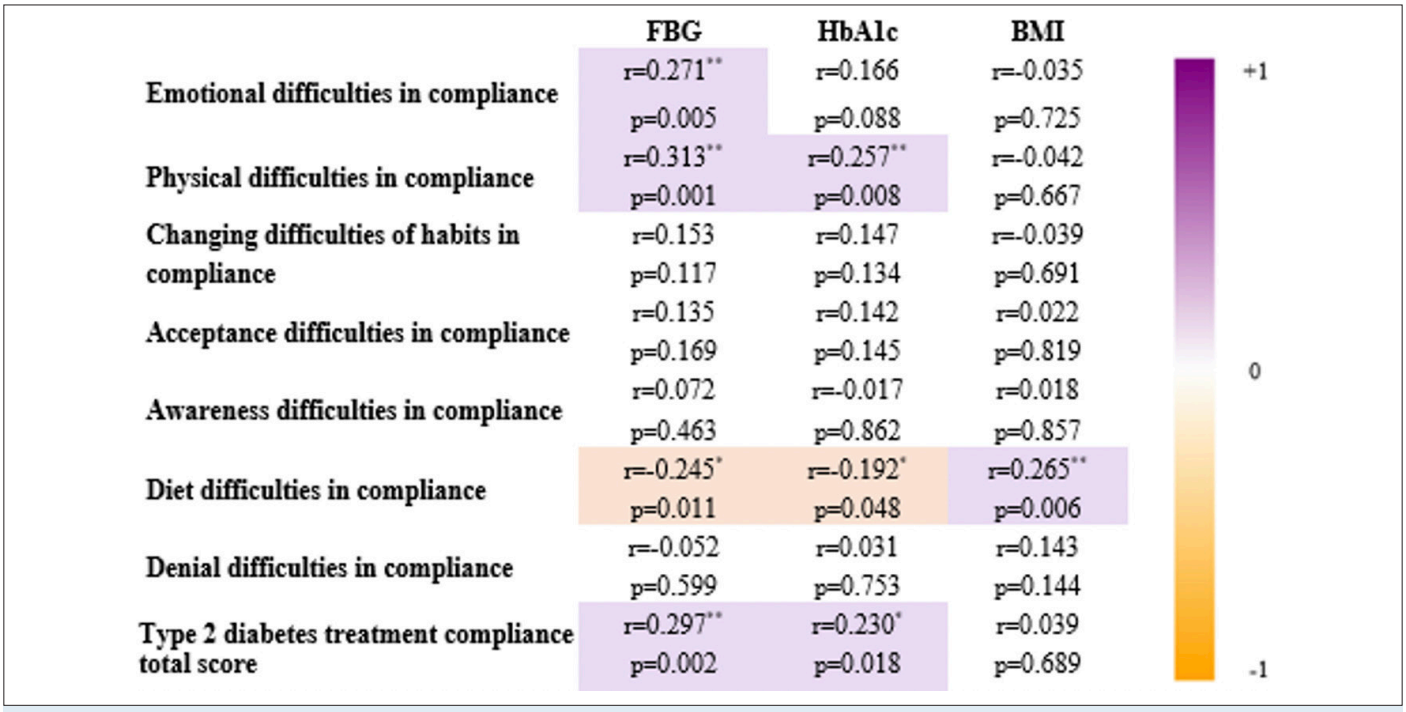

Figure 3. Relationship between participants' adherence to treatment and fasting blood glucose, HbA1c, and body mass index.

r: Pearson correlation coefficient; *: Correlation is significant at the 0.05 level; **: Correlation is significant at the 0.01 level; FBG: Fasting blood glucose; HbA1c: Haemoglobin A1c test; BMI: Body Mass Index.

pressures and negative emotional states adversely affect treatment compliance.

Another important finding obtained within the scope of the study shows a positive relationship between social pressure and treatment compliance. As social pressure increases, significant increases have been observed in individuals' attitudes towards treatment, their level of knowledge, lifestyle changes, and overall compliance scores. This finding shows that social pressure is not only a negative factor, but in some cases can encourage individuals to develop a more responsible attitude towards treatment. However, the effect of social pressure varies depending on whether its structure is supportive or coercive.[19]

On the other hand, a negative relationship was found between the tendency to 'diet difficulties in compliance' and treatment compliance. This suggests that individuals occasionally seek flexibility regarding the treatment regimen, and this tendency may hinder treatment success. Previous studies have also reported that rule-breaking behaviours, particularly in individuals with diabetes, can lead to deviations in the treatment process and loss of motivation.[20] Joseph et al.[21] emphasise that individuals' eating attitudes can affect all dimensions of treatment adherence and stress the need to carefully evaluate these behaviours in education and counselling processes.

The findings also showed the effects of eating attitudes on metabolic control. Significant negative correlations were found between FBG and restrictive eating attitudes, and significant positive correlations were found between preoccupation with eating and FBG. While the association between restrictive tendencies and low FBG levels may initially appear to be a positive outcome, it is noted that such diets may not be sustainable in the long term and could potentially trigger emotional eating behaviours in individuals, leading to adverse outcomes.[22,23] In this context, it is important to adopt flexible and sustainable nutritional approaches that take individual differences into account rather than strict restrictions in diabetes management.

The positive relationship between preoccupation with eating and FBG levels indicates that paying more attention to eating behaviours can have positive effects on glycaemic control by encouraging conscious eating habits. Indeed, Sarmento and colleagues[22] demonstrated that healthy eating habits led to significant improvements in HbA1c and FBG levels.

The positive relationship found between BMI and restrictive eating attitudes suggests that restrictive behaviours may paradoxically be associated with obesity. This finding suggests that restrictive tendencies in some individuals may

result in eating disorders, which may further complicate weight management. Obesity is a key risk factor in the development of T2DM and can negatively affect treatment compliance.[24] Therefore, a holistic approach supported by behavioural therapy interventions, rather than diet alone, is necessary.[7]

The study also examined associations between biochemical markers (FBG, HbA1c), anthropometric data (BMI), and treatment adherence. Negative correlations between FBG and both total adherence scores and the dimensions of emotional and physical difficulties underscore the importance of these factors in diabetes management. Additionally, the positive association between diet-related difficulties and FBG implies that poor dietary adherence may impair glycaemic control. Consistent with prior literature, HbA1c levels were negatively correlated with overall adherence and knowledge scores. Similarly, Patel et al.[25] reported that poor diet quality was positively associated with both HbA1c and BMI, which in turn negatively impacted treatment outcomes.[26]

A negative association was observed between BMI and diet-related difficulties in treatment compliance, suggesting that individuals with lower BMI may adopt a more flexible or personalized approach to dietary rules. While the direction of this relationship remains unclear, longitudinal studies are needed to explore potential causality. Previous research has indicated that reduced self-control during weight loss may lead individuals to loosen dietary restrictions, potentially undermining treatment adherence.[27]

The findings of this study indicate that negative eating attitudes have a significant impact on adherence to diabetes treatment. In particular, the strong relationships observed between various aspects of treatment adherence and sub-dimensions such as restriction and social pressure highlight the importance of behavioural interventions in clinical practice. The literature indicates that counselling methods supporting behavioural change, such as motivational interviewing (MI), lead to clinically significant reductions in HbA1c levels and improve lifestyle adherence.[28,29] Similarly, individualised education and counselling programmes, as well as digital health applications, have been reported to increase treatment adherence in individuals with diabetes.[30] When considered alongside the findings of this study, this evidence suggests that the systematic implementation of behavioural interventions targeting eating attitudes in clinical practice may be an effective strategy for improving treatment adherence and strengthening long-term metabolic control.

This study offers a unique contribution by integrating the EAT-26 subscales with treatment adherence profiles in individuals with T2DM. By examining the relationships between specific eating attitudes—such as restrictive eating, preoccupation with food, and perceived social pressure—and treatment adherence, this research provides insights into how psychological and behavioral factors influence not only compliance with treatment regimens but also metabolic outcomes like HbA1c, fasting blood glucose, and body mass index

Limitations

This study has certain limitations. The cross-sectional design restricts causal inference between eating attitudes, treatment adherence, and obesity. The single-centre setting and modest sample size may also limit generalisability to broader populations. Furthermore, reliance on self-reported measures introduces potential recall and social desirability bias. Finally, the exclusion of other psychosocial and clinical determinants and the relatively short study period constrain the scope of interpretation. Nevertheless, future longitudinal, multi-centre studies with larger and more diverse samples hold promise for generating deeper insights and guiding more effective, patient-centred interventions.

Conclusion

This study has revealed that eating attitudes in individuals with T2DM have a decisive effect on treatment compliance and metabolic control. Restrictive eating tendencies support more conscious participation in the treatment process, while excessive focus on eating behaviour and the search for flexibility in diet can negatively affect compliance. Additionally, the relationships between eating attitudes and biochemical and anthropometric indicators such as FBG, HbA1c, and BMI highlight the physiological consequences of these behaviours. The findings clearly emphasise the importance of individualised, sustainable, and interdisciplinary approaches in diabetes management.

Future studies should employ longitudinal and multi-centre designs to validate these associations and clarify causal mechanisms. Incorporating psychological and behavioural interventions into diabetes care may offer deeper insights into the impact of eating attitudes on long-term adherence and metabolic outcomes. In addition, examining sociocultural influences, family support, and comorbid psychological conditions could contribute to the development of more comprehensive and patient-centred strategies.

Ethics Committee Approval: The İnönü University Health Sciences Non-Interventional Clinical Research Ethics Committee granted approval for this study (date: 15.10.2024, number: 2024/6497).

Informed Consent: Written informed consent was obtained.

Conflict of Interest: None declared.

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Authorship Contributions: Concept: HT, ÇA; Design: HT; Supervision: HT, ÖÇ; Resource: HT; Materials: ÇA, ÖÇ; Data Collection or Processing: ÇA, ÖÇ; Analysis or Interpretation: HT; Literature Search: HT, ÇA, ÖÇ; Writing: HT; Critical Reviews: HT, ÇA.

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References

1. Gastaldelli A. Role of beta-cell dysfunction, ectopic fat accumulation and insulin resistance in the pathogenesis of type 2 diabetes mellitus. Diabetes Res Clin Pract 2011;93 Suppl 1:S60-5. [CrossRef]
2. International Diabetes Federation. IDF Diabetes Atlas, 11th ed, 2025. Available at: https://www.diabetesatlas.org. Accessed June 5, 2025.
3. ElSayed NA, Aleppo G, Aroda VR, Bannuru RR, Brown FM, Bruemmer D, et al; on behalf of the American Diabetes Association. 2. Classification and diagnosis of diabetes: standards of care in diabetes-2023. Diabetes Care 2023;46(Suppl 1):S19-40. Erratum in: Diabetes Care 2023;46(5):1106. Erratum in: Diabetes Care 2023;46(9):1715. [CrossRef]
4. Evert AB, Dennison M, Gardner CD, Garvey WT, Lau KHK, MacLeod J, et al. Nutrition therapy for adults with diabetes or prediabetes: A consensus report. Diabetes Care 2019;42(5):731-54. [CrossRef]
5. Martins-Filho AOF, Moraes LS, Castilhos CB, Santos LP, Feoli AMP, Busnello FM, et al. Eating behavior and dietary practices are associated with age, sex, body mass index, and body fat in individuals with type 2 diabetes and/or hypertension in Brazil. Nutr Res 2024;128:50-9. [CrossRef]
6. Ritz P, Bertrand M, Hanaire H. Comparing abnormal eating behavior in type 1 and 2 diabetic patients. Preedy V, Watson R, Martin C, editors. Handbook of Behavior, Food and Nutrition. New York: Springer; 2011. [CrossRef]
7. Ercan A, Kiziltan G. Obesity-related abnormal eating behaviors in Type 2 diabetic patients. Pak J Med Sci 2013;29(6):1323-8. [CrossRef]
8. Petroni ML, Barbanti FA, Bonadonna R, Bruno G, Caletti MT, Croci M, et al. Dysfunctional eating in type 2 diabetes mellitus: A multicenter Italian study of socio-demographic and clinical associations. Nutr Metab Cardiovasc Dis 2019;29(9):983-90. [CrossRef]
9. Katsaridis S, Grammatikopoulou MG, Gkiouras K, Tzimos C, Papageorgiou ST, Markaki AG, et al. Low reported adherence to the 2019 American Diabetes Association nutrition recommendations among patients with type 2 diabetes mellitus, indicating the need for improved nutrition education and diet care. Nutrients 2020;12(11):3516. [CrossRef]
10. Barana L, Colleluori G, Sulpizi MT, Ortenzi K, Farano L, Fanelli CG, et al. Efficacy of the holistic, psychonutritional approach of Centro DAI e Obesità di Città della Pieve in the management of type 2 diabetes among patients with obesity and dysfunctional eating. J Diabetes Metab Disord 2022;21(2):1883-93. [CrossRef]
11. Abbott S, Dindol N, Tahrani AA, Piya MK. Binge eating disorder and night eating syndrome in adults with type 2 diabetes: a systematic review. J Eat Disord 2018;6:36. [CrossRef]
12. Jalali N, Taghavi Kojidi H, Badrfam R, Zandifar A. The relationship between personality disorder, depression and eating disorder with treatment adherence in patients with type 2 diabetes; a cross-sectional study in diabetic patients in Iran. J Diabetes Metab Disord 2021;20(1):153-9. [CrossRef]
13. Winston AP. Eating Disorders and Diabetes. Curr Diab Rep 2020;20(8):32. [CrossRef]
14. Garner DM, Olmsted MP, Bohr Y, Garfinkel PE. The eating attitudes test: psychometric features and clinical correlates. Psychol Med 1982;12(4):871-8. [CrossRef]
15. Erguney-Okumus FE, Sertel-Berk HO. The Psychometric Properties of the Eating Attitudes Test Short Form (EAT-26) in a College Sample. Studies Psychol 2020;40:57-78.
16. Demirtaş 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;4(3):244-51. [CrossRef]
17. Akca D, Senturk S. Effect of eating attitudes of individuals with Type 2 diabetes upon quality of life. Int J Health Serv Res Policy 2020;5(2):99-110. [CrossRef]
18. Yannakoulia M. Eating behavior among type 2 diabetic patients: a poorly recognized aspect in a poorly controlled disease. Rev Diabet Stud 2006 Spring;3(1):11-6. [CrossRef]
19. Yang F, Pang JS, Cheng WJ. Self-care adherence and psychological functioning of older patients with type 2 diabetes: effects of persuasion, social pressure, and self-efficacy. J Clin Psychol Med Settings 2016;23(4):389-401. [CrossRef]
20. Jaworski M, Panczyk M, Cedro M, Kucharska A. Adherence to dietary recommendations in diabetes mellitus: disease acceptance as a potential mediator. Patient Prefer Adherence 2018;12:163-74. [CrossRef]
21. Joseph M, Shyamasunder AH, Mammen P, Thomas N. Type 1 diabetes mellitus and eating disorders. Int J Diabetes Dev Ctries 2017;37:502-6. [CrossRef]
22. Sarmento RA, Antonio JP, de Miranda IL, Nicoletto BB, de Almeida JC. Eating patterns and health outcomes in patients with type 2 diabetes. J Endocr Soc 2017;2(1):42-52. Erratum in: J Endocr Soc 2018;2(4):348. [CrossRef]

23. Gouda M, Matsukawa M, Iijima H. Associations between eating habits and glycemic control and obesity in Japanese workers with type 2 diabetes mellitus. Diabetes Metab Syndr Obes 2018;11:647-58. [CrossRef]
24. Seck D, Shah S, Correia E, Marques C, Varraso R, Gaye B, et al. High adherence to the French dietary guidelines decreases type 2 diabetes risk in females through pathways of obesity markers: Evidence from the E3N-EPIC prospective cohort study. Nutrition 2024;124:112448. [CrossRef]
25. Patel HK, Unadkat SV, Patel BA, Parmar DV. Factors influencing adherence to dietary recommendations for type 2 diabetes mellitus and their impact on disease control: A cross-sectional study. J Family Med Prim Care 2024;13(12):5648-54. [CrossRef]
26. Brown SA, García AA, Brown A, Becker BJ, Conn VS, Ramírez G, et al. Biobehavioral determinants of glycemic control in type 2 diabetes: A systematic review and meta-analysis. Patient Educ Couns 2016;99(10):1558-67. [CrossRef]
27. Sunuwar DR, Nayaju S, Dhungana RR, Karki K, Singh Pradhan PM, Poudel P, et al. Effectiveness of a dietician-led intervention in reducing glycated haemoglobin among people with type 2 diabetes in Nepal: a single centre, open-label, randomised controlled trial. Lancet Reg Health Southeast Asia 2023;18:100285. [CrossRef]
28. Ekong G, Kavookjian J. Motivational interviewing and outcomes in adults with type 2 diabetes: A systematic review. Patient Educ Couns 2016;99(6):944-52. [CrossRef]
29. Palacio A, Garay D, Langer B, Taylor J, Wood BA, Tamariz L. Motivational Interviewing Improves Medication Adherence: a Systematic Review and Meta-analysis. J Gen Intern Me. 2016;31(8):929-40. [CrossRef]
30. Chrvala CA, Sherr D, Lipman RD. Diabetes self-management education for adults with type 2 diabetes mellitus: A systematic review of the effect on glycemic control. Patient Educ Couns 2016;99(6):926-43. [CrossRef]