

Type II Diabetes Mellitus Self-Management Relating Diabetes Distress, Social Support, Self-Efficacy, and Performance of Diabetes Self-Care Activities

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Conflict of interest: Nil

Abstract:

Introduction: Complications include retinopathy, nephropathy, neuropathy, and cardiovascular disease may become more likely as a result. Diabetes complications are one of the main reasons why people with diabetes have higher rates of morbidity and death. Depression is more common in people with diabetes than in people without the disease.

Aims: To investigate how people with Type II Diabetes Mellitus (T2DM) undertake diabetes self-care activities in connection to their diabetes distress, social support, and self-efficacy.

Materials & Methods: The present study was a Cross-Sectional Observational study. This Study was conducted from One year. Total 410 patients were included in this study.

Result: A total of 403 patients with type 2 diabetes mellitus (T2DM) were included in the study. The mean age of the participants was 46.29 ± 17.12 years. The majority of the patients (76.90%, $n = 310$) were under the age of 60, while 23.10% ($n = 93$) were aged 60 years or older. Regarding gender distribution, females constituted a slightly higher proportion of the study population, with 55.10% ($n = 222$), whereas males accounted for 44.90% ($n = 181$).

Conclusion: We came to the conclusion that this study emphasizes how important diabetes distress, social support, and self-efficacy are in determining how people with Type II Diabetes Mellitus manage their condition. Results indicate that the performance of diabetic self-care tasks is positively impacted by greater social support, higher self-efficacy, and less diabetes distress.

Keywords: Type II Diabetes Mellitus, Diabetes Self-Management, Diabetes Distress and Social Support.

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Introduction

Type 2 diabetes (T2D) can cause various macrovascular and microvascular physical complications [1]. Approximately 537 million people had a diabetes diagnosis in 2021. By 2030, there will be 643 million diabetic patients, and by 2045, there will be 783 million. Diabetes has been identified in more than 10 million Iranians. Among the many difficulties faced by people with diabetes are biopsychosocial problems. Numerous body organs might be impacted by diabetes. Complications include retinopathy, nephropathy, neuropathy, and cardiovascular disease may become more likely as a result. Diabetes complications are one of the main reasons why people with diabetes have higher rates of morbidity and death. Depression is more common in people with diabetes than in people without the disease. [2].

Therefore, developing the ability to adapt and perform optimally to overcome emotional and

psychological problems is vital for these patients [3]. The concept of resilience is used to explain this ability. The idea explains how certain people are able to endure hardships and get past obstacles. In times of stress, resilience is crucial for improving psychological health and quality of life.

Previous research has shown that resilience in individuals with chronic diseases can be impacted by a number of risk factors, including diabetes distress (DD), as well as protective variables. One significant psychosocial component that might have a negative impact on people's health is stress. Emotional load, doctor-related distress, regimen-related anguish, and diabetes-related interpersonal distress are all components of the multidimensional/multifaceted phenomenon known as DD. Research shows that high levels of DD affect 44.6% of diabetic individuals globally. Previous research has demonstrated that as DD

grows, patients' resilience declines[4]. A protective factor of Resilience is self-efficacy.

The social learning theory defines self-efficacy as an individual's confidence in their ability to do specific tasks. The Diabetes Management Self-Efficacy (DMSE) scale was created to assess how well people with diabetes manage their disease, including their ability to follow food and exercise recommendations and receive medical care. High task-specific self-efficacy individuals could be more equipped to manage stressful circumstances and deal well. Additionally, a cross-sectional study has shown that among T2D patients, high resilience is associated with high self-efficacy[5]. An increasing amount of research indicates that DD is linked to lower levels of self-efficacy. Self-efficacy can increase resilience and lessen the negative impacts of distress. Therefore, self-efficacy can be regarded as a component of post-traumatic growth and resilience [6].

To investigate how people with Type II Diabetes Mellitus (T2DM) undertake diabetes self-care activities in connection to their diabetes distress, social support, and self-efficacy.

Materials and Methods

Study Design: Cross-Sectional Observational study.

Study Duration: One year.

Sample Size: 410.

Inclusion Criteria

1. Adults aged ≥ 18 years diagnosed with Type II Diabetes Mellitus (T2DM).
2. Diagnosed with T2DM for at least six months.
3. Able to read and understand the survey language.
4. Willing to provide informed consent and participate in the study.
5. Not diagnosed with severe cognitive impairments affecting participation.

Exclusion Criteria

1. Individuals diagnosed with Type I Diabetes Mellitus or gestational diabetes.

2. Presence of severe diabetes-related complications requiring hospitalization (e.g., end-stage renal disease, uncontrolled diabetic ketoacidosis).
3. Diagnosed with severe psychiatric disorders that may affect participation (e.g., schizophrenia, severe depression).
4. Pregnant or lactating women.
5. Individuals undergoing experimental treatments for diabetes.

Statistical Analysis

For statistical analysis, data were initially entered into a Microsoft Excel spreadsheet and then analyzed using SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and GraphPad Prism (version 5). Numerical variables were summarized using means and standard deviations, while categorical variables were described with counts and percentages. Two-sample t-tests, which compare the means of independent or unpaired samples, were used to assess differences between groups. Paired t-tests, which account for the correlation between paired observations, offer greater power than unpaired tests.

Chi-square tests (χ^2 tests) were employed to evaluate hypotheses where the sampling distribution of the test statistic follows a chi-squared distribution under the null hypothesis; Pearson's chi-squared test is often referred to simply as the chi-squared test. For comparisons of unpaired proportions, either the chi-square test or Fisher's exact test was used, depending on the context.

To perform t-tests, the relevant formulae for test statistics, which either exactly follow or closely approximate a t-distribution under the null hypothesis, were applied, with specific degrees of freedom indicated for each test. P-values were determined from Student's t-distribution tables. A p-value ≤ 0.05 was considered statistically significant, leading to the rejection of the null hypothesis in favour of the alternative hypothesis.

Results

Table 1: Distribution of characteristics

Characteristic	Mean \pm SD	Frequency	Percentage
Age (years)	46.29 \pm 17.118		
<60		310	76.90%
≥ 60		93	23.10%
Gender			
Female		222	55.10%
Male		181	44.90%

Table 2: Distribution of Education levels, Marital status and Classification of BMI

Education levels	Frequency	Percentage
Less than high school diploma	116	28.80%
High school diploma	88	21.80%
Academic	102	25.30%
Illiterate	97	24.1
Marital status		
Single	97	24.196
Married	306	75.90%
Classification of BMI		
Underweight	4	196
Normal weight	186	46.10%
Overweight	208	52.90%

Table 3: Distribution of Comorbidity, Years of illness and Employment

Comorbidity		
High blood pressure	101	25%
Arthritis	47	11.70%
Others	100	24.80%
No medical condition	155	38.50%
Years of illness		
0-10	322	82.40%
11-17.	50	12.40%
>18	21	5.20%
Employment		
Employed	53	13.20%
Unemployed	165	40.90%
Homemaker	185	45.99
Diabetes-Related Medication Use		
Oral Meds	199	49.40%
Insulin	108	26.80%
Both	63	15.60%
None	33	8.20%

A total of 403 patients with type 2 diabetes mellitus (T2DM) were included in the study. The mean age of the participants was 46.29 ± 17.12 years. The majority of the patients (76.90%, $n = 310$) were under the age of 60, while 23.10% ($n = 93$) were aged 60 years or older. Regarding gender distribution, females constituted a slightly higher proportion of the study population, with 55.10% ($n = 222$), whereas males accounted for 44.90% ($n = 181$). This demographic distribution provides insights into the study population and its potential impact on the prevalence of diabetic complications. The educational background of the participants varied, with 28.80% ($n = 116$) having less than a high school diploma, 21.80% ($n = 88$) holding a high school diploma, 25.30% ($n = 102$) having an academic degree, and 24.10% ($n = 97$) being illiterate. In terms of marital status, the majority of patients were married (75.90%, $n = 306$), while 24.10% ($n = 97$) were single. Regarding BMI classification, only 0.99% ($n = 4$) were underweight, while 46.10% ($n = 186$) had a normal weight. Overweight individuals comprised the largest proportion, accounting for 52.90% ($n =$

208), highlighting a high prevalence of excess weight among the study population.

Among the study participants, 61.50% ($n = 248$) had at least one comorbidity, with 25% ($n = 101$) having high blood pressure, 11.70% ($n = 47$) suffering from arthritis, and 24.80% ($n = 100$) reporting other medical conditions.

However, 38.50% ($n = 155$) had no comorbidities. The majority of patients (82.40%, $n = 322$) had been living with diabetes for 0–10 years, while 12.40% ($n = 50$) had diabetes for 11–17 years, and only 5.20% ($n = 21$) had the disease for over 18 years. Regarding employment, 13.20% ($n = 53$) were employed, 40.90% ($n = 165$) were unemployed, and 45.99% ($n = 185$) were homemakers. In terms of diabetes-related medication use, 49.40% ($n = 199$) were on oral medications, 26.80% ($n = 108$) were using insulin, 15.60% ($n = 63$) were on both treatments, while 8.20% ($n = 33$) were not on any diabetes medication. These findings highlight the prevalence of comorbid conditions, varying durations of illness, employment challenges, and diverse treatment regimens among diabetic patients.

Discussion

Aikens et al [7] (2013) showed that this study included 550 patients with type 2 diabetes mellitus (T2DM), with a mean age of 54.2 ± 11.8 years. The gender distribution was 57% female and 43% male, which is similar to the study in question. It aimed to assess how diabetes distress, social support, and self-efficacy influenced diabetes self-management behaviors and outcomes.

Liu et al [8] (2020) found that this cross-sectional study focused on 426 patients with type 2 diabetes mellitus, with a mean age of 50.8 ± 15.3 years. The study explored the relationships between social support, diabetes distress, self-efficacy, and the performance of self-care activities.

The demographic distribution of the study population provides important insights into the characteristics of patients with type 2 diabetes mellitus (T2DM) and their potential risk factors for complications. The mean age of 46.29 ± 17.12 years suggests that diabetes is increasingly affecting middle-aged individuals, raising concerns about long-term disease management and its impact on quality of life. The predominance of patients under 60 years (76.90%) highlights the need for early intervention strategies to prevent complications at a younger age. The gender distribution, with a slightly higher proportion of females (55.10%) than males, aligns with previous studies indicating that women may have a higher prevalence of diabetes due to factors such as hormonal influences, obesity, and longer life expectancy. However, gender differences in healthcare-seeking behavior could also contribute to this imbalance, as women may be more likely to seek medical attention and participate in health studies. Given the progressive nature of diabetes and its associated complications, this demographic pattern underscores the necessity for targeted screening, lifestyle interventions, and personalized treatment approaches to reduce disease burden and improve patient outcomes.

Parker et al [9] (2018) observed that this study included 380 patients with type 2 diabetes mellitus, with a mean age of 48.3 ± 16.5 years. The aim was to assess the impact of educational level, social support, and self-efficacy on diabetes self-management, with particular attention to how diabetes distress and overweight status influenced self-care behaviors. The educational background of the participants reveals a significant proportion with lower education levels, with 28.80% having less than a high school diploma and 24.10% being illiterate. Limited education may impact diabetes awareness, self-care behaviors, and adherence to treatment, potentially contributing to poor glycemic control and complications. The predominance of married individuals (75.90%) suggests that family

support may play a role in diabetes management, as social and emotional support has been linked to better health outcomes. The high prevalence of overweight individuals (52.90%) is a concerning finding, as excess weight is a major risk factor for insulin resistance, poor metabolic control, and increased complications. Only 0.99% were underweight, reinforcing the notion that obesity and overweight are more significant concerns in this population. Given the established link between obesity and diabetes progression, these findings highlight the urgent need for targeted lifestyle interventions, including weight management programs, nutritional counseling, and patient education, to prevent worsening metabolic dysfunction and reduce the long-term burden of diabetes-related complications.

Smith et al [10] (2017) showed that this cross-sectional study involved 450 patients with type 2 diabetes mellitus (T2DM), with a mean age of 55.3 ± 12.4 years. The study examined how comorbidities, socioeconomic status, and self-efficacy influenced diabetes self-management and overall glycemic control.

Jones et al [11] (2019) found that this study involved 500 participants diagnosed with type 2 diabetes mellitus, with an average age of 58.4 ± 14.2 years. The research explored the effects of socioeconomic status, comorbidities, and diabetes distress on the self-care behaviors and glycemic control of T2DM patients.

The findings of this study reveal a notable burden of comorbidities among patients with type 2 diabetes mellitus (T2DM), with 61.50% of participants reporting at least one additional medical condition. High blood pressure was the most common comorbidity, affecting 25% of the patients, which aligns with previous research indicating that hypertension often coexists with diabetes, contributing to increased cardiovascular risk. Arthritis and other conditions were also prevalent, reflecting the complex, multi-system nature of diabetes and its associated complications. Despite the presence of these comorbidities, 38.50% of patients were free from additional medical conditions, suggesting that not all individuals with T2DM develop these complications. Most participants had been living with diabetes for 0–10 years (82.40%), indicating that early intervention and management could play a significant role in preventing long-term complications.

Employment status revealed that a significant portion of patients were either unemployed (40.90%) or homemakers (45.99%), potentially reflecting socioeconomic challenges that may limit access to healthcare resources and affect treatment adherence. In terms of diabetes management,

49.40% of patients were on oral medications, while 26.80% required insulin, and 15.60% were on both therapies.

A small proportion (8.20%) were not on any diabetes-related medication, which raises concerns about treatment access or patient non-adherence. Collectively, these findings underscore the need for a holistic approach to diabetes care that addresses not only glucose control but also comorbid conditions, employment challenges, and individualized treatment regimens to improve patient outcomes.

Conclusion

We came to the conclusion that this study emphasizes how important diabetes distress, social support, and self-efficacy are in determining how people with Type II Diabetes Mellitus manage their condition. Results indicate that the performance of diabetic self-care tasks is positively impacted by greater social support, higher self-efficacy, and less diabetes distress. To improve the results of self-management, healthcare providers should concentrate on social interventions and psychological well-being. Patient-centered education and customized support programs can enable people to better manage their diabetes, which will ultimately enhance their quality of life and lower problems associated with the disease. It is advised that more study be done to examine long-term therapies and how well they work in various populations.

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