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A Cross-sectional study to assess the Diabetes-Related Distress in Patients undergoing therapy at a specialized healthcare facility

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ABSTRACT

Background: Diabetes mellitus is a long-term condition that necessitates ongoing medical attention, self-management by the patient, and adjustments to lifestyle habits. Alongside its physical complications, diabetes often leads to significant psychological stress, known as diabetes-related distress, which impacts treatment adherence and quality of life.

Objective: The research is focused to analyse the prevalence of Diabetes related distress in Type 2 Diabetes Mellitus Patients and also to evaluate the correlation between Diabetes Distress and glycemic control (HbA1c)

Methods: A sample of adult T2DM patients aged more than 18years from the outpatient and inpatient departments of Chettinad Hospital and Research Institute, Chennai, were assessed. Patients with psychiatric illnesses, those on psychotropic drugs or corticosteroids, and those with other severe medical ailments requiring immediate intervention were excluded.

Results: The research revealed a significant occurrence of diabetes-related distress among the participants, influenced by various sociodemographic and clinical factors that affect the levels of distress. Key factors associated with increased distress included poor glycemic control, longer duration of diabetes, and lack of family support.

Conclusion: The findings emphasize the need for routine screening and early intervention for diabetes distress to improve management outcomes. Comprehensive care models that integrate psychological support into diabetes management are essential for addressing the emotional well-being of diabetic patients and enhancing treatment adherence..

Keywords: *Diabetes mellitus, medical attention, glycemic control, Diabetes Distress.*

1. INTRODUCTION

Diabetes mellitus (DM) is a common long-term comorbid illness marked by difficulties in glucose management, leading to numerous chronic complications that impact different bodily systems. Worldwide, the prevalence of diabetes is increasing consistently, with Type 2 Diabetes Mellitus (T2DM) representing the majority of these instances. Managing diabetes effectively requires continuous medical attention, strict adherence to lifestyle modifications, and regular self-monitoring, which can place a significant burden on patients.

Apart from physical health issues, diabetes often leads to considerable psychological stress, known as diabetes-related distress. This form of distress encompasses the emotional and mental challenges specifically associated with managing the illness, including concerns about blood sugar control, potential complications, medication routines, and lifestyle adjustments.

levels, and general quality of life, frequently resulting in less-than-ideal health results. Therefore, addressing this form of distress is crucial for effective diabetes management and to mitigate further health complications.

Despite its importance, diabetes distress is often under recognized and inadequately addressed in clinical practice, especially in resource-limited settings. As healthcare focuses on the physiological aspects of diabetes, the psychological challenges faced by patients may be overlooked. This research focuses on examining the occurrence of diabetes-related distress among patients with T2DM at a specialized healthcare facility also identify the factors associated with distress, and provide insights into the need for integrated care approaches. By underscoring the significance of mental well-being in managing diabetes, this research underscores the necessity of prompt identification and action regarding assessing diabetes-related distress, promoting a comprehensive strategy that integrates psychological assistance into conventional diabetes care methods

2. AIM AND OBJECTIVES

1.To study the prevalance of diabetes-related distress in individuals with Type 2 Diabetes Mellitus (T2DM).
2. To examine the relationship between diabetes-related distress and glycemic control, as measured by HbA1c levels.

3. MATERIALS AND METHODS

This research was structured as a cross-sectional observational study aimed at assessing clinical parameters and associated factors in individuals diagnosed with Type 2 Diabetes Mellitus (T2DM). The research carried out at the Chettinad Hospital and Research Institute, located in Kelambakkam, Chennai., and included both outpatient and inpatients with T2DM. The study's design allowed for an examination of associations among demographic, clinical, and laboratory characteristics of T2DM patients over a specific period.

SAMPLE SIZE

142 patients with Type 2 Diabetes Mellitus

STUDY DURATION

January 2025 to March 2025

Inclusion Criteria

The following eligibility requirements were established to guarantee that the study group comprised only pertinent cases:

1 All individuals identified with Type 2 Diabetes Mellitus (T2DM).

2. Participants aged 18 years and above.

3. Patients were recruited from general medicine outpatients and inpatients care in Chettinad Hospital and Research Institute.

Above criteria was fixed to focus on the adult population of T2DM patients who visited the hospital, allowing the study to gather a representative sample of diabetic patients across different healthcare settings within the hospital.

Exclusion Criteria

To maintain homogeneity in the study population and avoid confounding factors, the following exclusion criteria were set:

1. Patients with any comorbid psychiatric illness: These individuals were excluded to avoid the potential impact of mental health disorders on the assessment of diabetes-related parameters.

2. Patients on corticosteroids or psychotropic drugs: Since these medications can influence metabolic parameters and potentially affect the control and progression of diabetes, patients using these drugs were not included.

3. Individuals with ongoing medical and surgical conditions apart from T2DM.: Patients with other chronic illnesses could have had overlapping symptoms or treatments affecting T2DM outcomes, thus they were excluded to maintain focus on diabetes alone.

4. Individuals with renal, neurological or cardiovascular dysfunction who require urgent hospitalization for serious illness: Given the acute nature of these conditions, immediate hospitalization could lead to significant variability in health status, which may obscure findings related to T2DM. Therefore, patients with severe dysfunctions requiring urgent medical intervention were excluded.

These exclusion criteria were carefully defined to ensure that the study focused solely on the primary target group—patients with T2DM without severe co-existing conditions that could skew the data.

Statistical Analysis

The information gathered was examined utilizing SPSS software., which allowed for computation of both descriptive and inferential statistics. The analysis was structured as follows:

1. Descriptive Statistical evaluation: Summary statistics were computed for both continuous and categorical variables. Mean and standard deviation (SD) can be described as the average value and the measure of variability in a dataset, respectively. Were used For continuous variables, it is important to summarize their central tendency and variability. Frequencies and percentages were utilized to summarize categorical variables, offering a comprehensive view of the distribution and traits of the study population.

2. Comparative Analysis:

- **Unpaired t-test**: The independent samples t-test was utilized to analyze differences in normally distributed continuous variables between two independent groups. This approach facilitated the identification of significant variations in continuous characteristics associated with Type 2 Diabetes Mellitus (T2DM).
- **Chi-square test**: The chi-square test was applied to assess differences in categorical variables across groups. This non-parametric test allowed for comparisons of proportions, such as gender distribution, age group classifications, or the presence of specific risk factors, among the study participants.
- **Significance Level**: A p-value of less than 0.05 was considered statistically significant, ensuring that the observed differences were likely due to true associations rather than random chance.

The choice of these statistical methods provided a robust analysis of both continuous and categorical data, enabling meaningful comparisons within the study population. These methods supported the identification of statistically significant relationships, contributing to a deeper understanding of the clinical spectrum and associated factors in individuals with T2DM within a hospital setting.

4. RESULTS

The table (Fig.1) represents the summary of diabetes-related distress among 142 individuals diagnosed with Type 2 Diabetes Mellitus (T2DM), with an average age of 53.94 years. Among these participants, 63 were female (44.36%) and 79 were male (55.63%). The mean HbA1c level, which reflects blood glucose management, was recorded at 7.72%, while the average duration of the disease was 6.56 years. When assessing diabetes-related distress using the Diabetes Distress Scale (DDS), it was found that most patients experienced low levels of distress (DDS <2)., with 91.13% of males and 79.36% of females in this category. Moderate distress (DDS 2-3) was more common in females (11.11%) than males (1.26%), while high distress (DDS >3) affected 7.59% of males and 9.52% of females. These findings suggest that although most patients experience low diabetes-related distress, a notable minority particularly female patients experience moderate to high distress, indicating a potential need for additional psychological support.(Fig.1)

The table (Fig.2) illustrates the scores related to diabetes distress among patients with T2DM across different areas, with scores classified as <2 (indicating low distress), 2-3 (indicating moderate distress), and >3 (indicating high distress). Regarding the overall diabetes distress score, 85.92% of individuals experienced low distress, 5.63% experienced moderate distress, and 8.45% experienced high distress. In the emotional burden category, 78.17% reported low distress, 7.75% reported moderate distress, and 14.08% reported high distress. For interpersonal distress, 92.25% of patients had low distress, 3.52% had moderate distress, and 4.23% had high distress.Physician-related distress was low for most patients (97.18%), with only 2.11% experiencing moderate distress and 0.70% high distress. Finally, regimen-related distress was low in 83.10%, moderate in 3.52%, and high in 13.38% of patients. These results indicate that while overall distress levels are generally low, emotional and regimen-related burdens show relatively higher levels of distress among patients.

This table (Fig.3) represents the HbA1c levels (an indicator of sustained blood glucose management) in relation to varying degrees of diabetes-related distress (DSS) scores.segmented into four distress categories: Assessing diabetes-related distress involves evaluating total diabetes discomfort, treatment-associated stress, emotional strain, and social relationship challenges.Each category divides patients into three distress levels: DSS <2 (low distress), DSS 2-3 (moderate distress), and DSS >3 (high distress For each level of distress within these categories, the table represents minimum, maximum, mean, median, and standard deviation (SD) values for HbA1c. For instance, in the overall diabetes distress category, individuals experiencing low distress (DSS <2) had an average HbA1c of 7.55, whereas those with high distress (DSS >3) had an average HbA1c of 9.4. This suggests a correlation where increased distress levels are linked to poorer glycemic control. A similar trend is noted in other distress domains, indicating that as distress escalates, HbA1c levels are likely to increase, highlighting a possible connection between psychological distress and glycemic control among individuals with diabetes.

RESULTS

Total Number of Patients -142

Mean Age (yrs)	53.94±12.25
Female(%)	63(44.36)
Male(%)	79(55.63)
Mean HBA1C	7.72±1.62
Disease duration (yrs)	6.56±5.27

	DDS <2	DDS 2-3	DDS >3
Male	72(91.13)	1(1.26)	6(7.59)
Female	50(79.36)	7(11.11)	6(9.52)

Fig.1

Distress score	Score <2	Score 2-3	Score >3
Total diabetes distress score	122(85.92)	8(5.63)	12(8.45)
Emotional Burden	11(78.17)	11(7.75)	20(14.08)
Interpersonal Distress	13(92.25)	5(3.52)	6(4.23)
Physician related Distress	138(97.18)	3(2.11)	1(0.70)
Regimen-related distress	118(83.10)	5(3.52)	19(13.38)

Fig.2

Total diabetes distress score

HBA1C	DSS <2(n=122)	DSS 2-3 (n=8)	DSS >3 (n=12)
Minimum	5.6	5.9	7.1
Maximum	14.9	9.9	11.2
Mean	7.55	8.2	9.4
Median	7.2	8.3	9.8
SD	1.554	1.33	1.377

Regimen-related distress

HBA1C	DSS <2(n=118)	DSS 2-3 (n=5)	DSS >3 (n=19)
Minimum	5.6	8	5.9
Maximum	14.9	11.4	11.2
Mean	7.463	8.82	9.037
Median	7	8.2	9.8
SD	1.534	1.457	1.49

Emotional Burden

HBA1C	DSS <2(n=111)	DSS 2-3 (n=11)	DSS >3 (n=20)
Minimum	5.6	7	5.9
Maximum	14.2	14.9	11.2
Mean	7.33	9.0	9.45
Median	7	8.5	9.2
SD	1.329	2.458	1.406

Interpersonal Distress

HBA1C	DSS <2(n=131)	DSS 2-3 (n=5)	DSS >3 (n=6)
Minimum	5.6	5.9	7.2
Maximum	14.9	9.8	11.1
Mean	7.619	8.2	9.55
Median	7.4	0.5	9.8
SD	1.582	1.728	1.45

Fig.3

The findings confirm a notable link between increased diabetes-related distress and diminished glycemic control Patients experiencing greater overall diabetes-related distress, challenges related to their treatment regimen, emotional strain, and difficulties in interpersonal relationships consistently exhibited higher HbA1c levels. Specifically, the mean HbA1c was higher among patients with DSS scores >3 across all distress categories compared to those with DSS <2. This trend underscores the impact of psychological distress on blood glucose management.

5. DISCUSSION

Diabetes-related distress (DRD) refers to the emotional aspects related to managing diabetes. And psychological stress directly associated with managing a chronic illness like diabetes. Such distress impacts patients self-management strategies, compliance with treatment, and assessing diabetes related distress. Ultimately, their management of blood sugar levels and overall well-being is crucial. The findings of this research indicate that a significant number of individuals encounter heightened feelings of distress, highlighting the necessity of tackling both the physical and mental hurdles encountered by those living with T2DM.

One of the key discoveries was the link between inadequate glycemic control and increased levels of distress related to diabetes.Poorly controlled blood glucose levels are known to increase the risk of complications, which may heighten feelings of anxiety, frustration, and helplessness. Conversely, psychological stress can exacerbate glycemic variability, creating a vicious cycle. Patients with higher HbA1c levels may feel discouraged, leading to Reduced enthusiasm for personal well-being and assessing diabetes related distress. Potentially contributing an ongoing struggle with diabetes management. This relationship The highlighted information emphasizes the essential requirement for cohesive care frameworks that consider both physical and emotional aspects, particularly in assessing diabetes-related distress. Allowing for personalized interventions to support glycaemic control and reduce distress levels.

The study also confirms that extended period of diabetes was associated with increased challenges often encounter emotional and psychological burdens. Been managing diabetes for extended periods may experience “burnout” from the ongoing demands of self-care, lifestyle changes, and medical appointments. Over time, this can contribute to feelings of exhaustion and resentment toward their condition, impacting their motivation to adhere to treatment recommendations. These findings necessitate that healthcare providers need to consider the duration of a patient’s diabetes and acknowledge the risk of burnout, especially in long-term patients. Periodic mental health assessments, coupled with counselling or support groups, may benefit individuals who have been managing diabetes for several years.

The absence of family support was recognized as a significant contributor to diabetes-related distress. Support from family members is highly essential in managing diabetes, as it includes help with everyday activities such as preparing meals and offering emotional backing.A supportive family environment can mitigate feelings of isolation and bolster patients confidence in managing their condition. Patients without this support may face additional challenges, including difficulties adhering to dietary guidelines and lifestyle adjustments, which can intensify their distress. This finding emphasizes the role of family-centered approaches in diabetes care, encouraging family involvement in diabetes education and self-management practices.

Another point of discussion is the role of routine screening and early intervention for diabetes distress. Currently, diabetes management often focuses on biomedical outcomes, with limited emphasis on mental health. Screening tools such as the Diabetes Distress Scale (DDS) can aid in identifying high-risk individuals, enabling healthcare providers to offer early psychological interventions. Integrating psychological support into diabetes care could help mitigate DRD and improve adherence to treatment regimens This approach supports the study’s findings that promote holistic care models which encompass both the physical and psychological dimensions of diabetes management.

In conclusion, this research emphasizes the significance of a comprehensive strategy for diabetes care that includes regular evaluation and addressing of diabetes-related distress.By acknowledging the psychological challenges of diabetes and providing targeted interventions, Healthcare professionals have the opportunity to enhance patient results and overall well-being. This study’s results emphasize the necessity for addressing diabetes-related challenges. Collaboration between medical and psychological professionals to offer personalized, empathetic care that considers both physical and emotional aspects of diabetes management, thereby helping patients better cope with their chronic condition.

6. CONCLUSION

This study explores the potential link between diabetes-related distress and diabetes mellitus, shedding light on the importance of recognising and managing the emotional and psychological challenges faced by diabetic patients. Findings underscore the need for early identification and targeted interventions to effectively address diabetes distress, which is essential for achieving optimal diabetes management and improving patients quality of life.

Given the significant prevalence of distress among diabetic patients, routine screening and assessment for diabetes-related distress are recommended as part of standard diabetic care. Such proactive measures can help detect distress early and support the implementation of personalized interventions tailored to patients emotional and clinical needs. This research emphasizes the significance of a teamwork-oriented, all-encompassing, and holistic strategy in managing diabetes., involving both physical and psychological support. It is suggested that all diabetic patients should be screened and assessed for diabetic distress. The study provides an insight for collaborative, comprehensive and integrative care for Diabetes.

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