A study to assess the level of resilience and quality of life among patients with diabetes mellitus at selected villages under Rural Health and Training Centre

Un estudio para evaluar el nivel de resiliencia y la calidad de vida de los pacientes con diabetes mellitus en aldeas seleccionadas del Centro Rural de Salud y Capacitación

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Abstract

Introduction: Diabetes mellitus (DM) is a chronic metabolic disease with the clinical feature of an abnormally high blood glucose level, and it is considered a metabolic syndrome. Non-insulin Type 2 Diabetes Mellitus (NIDDM) is a chronic condition that significantly hampers patients' resilience and Activities of Daily Living (ADL), leading to a notable impact on their Quality of Life (QoL).
Objective: This study aims to assess the level of resilience and quality of life among the rural population.
Methodology: The study used a quantitative, descriptive cross-sectional approach. The sample size was 350 patients with diabetic mellitus who resided in villages under the Rural Health and Training Centre (RHTC), Vayalanallur. Data were collected using the Revised Version of the DQOL Questionnaire developed by WHO and the Devereux Adult Resilience Scale.
Result: The present study reveals that the mean score for a high level of resilience was 58.79 ± SD of 4, and the overall QOL score was 0.79 ± SD of 3.76.
Conclusion: Diabetes mellitus is a chronic metabolic disease that needs management throughout life, and it can impact the patient's level of resilience and quality of life.

Keywords

Type II Diabetes Mellitus, non-insulin-dependent diabetes mellitus, quality of life, resilience.

Resumen

Introducción: La diabetes mellitus (DM) es una enfermedad metabólica crónica que se caracteriza por una glucemia anormalmente alta y se considera un síndrome metabólico. La diabetes mellitus tipo 2 no insulínica (DMNID) es una enfermedad crónica que afecta significativamente la resiliencia y las actividades de la vida diaria (AVD) de los pacientes, lo que repercute notablemente en su calidad de vida (CdV).
Objetivo: Este estudio busca evaluar el nivel de resiliencia y la calidad de vida en la población rural.
Metodología: El estudio utilizó un enfoque cuantitativo, descriptivo y transversal. El tamaño de la muestra fue de 350 pacientes con diabetes mellitus residentes en las aldeas del Centro Rural de Salud y Capacitación (RHTC) de Vayalanallur. Los datos se recopilaron mediante la versión revisada del Cuestionario DQOL desarrollado por la OMS y la Escala de Resiliencia de Devereux para Adultos.
Resultado: El presente estudio revela que la puntuación media para un nivel alto de resiliencia fue de 58,79 ± DE de 4, y la puntuación general de calidad de vida fue de 0,79 ± DE de 3,76.
Conclusión: La diabetes mellitus es una enfermedad metabólica crónica que requiere tratamiento a lo largo de la vida y puede afectar el nivel de resiliencia y la calidad de vida del paciente.Flexibilidad, Equilibrio dinámico, Fuerza, Velocidad, Agilidad.

Palabras clave

Diabetes mellitus tipo II, diabetes mellitus no insulinodependiente, calidad de vida, resiliencia

Introduction

Diabetes Mellitus (DM) is a chronic and long-term disease affecting the majority of people in the world. In India, 77 million people have DM above the age of 18 years, and it is expected to reach 101 million by 2030. More than 50% of people are unaware of their diabetic status, according to the WHO. It is considered as the country's significant health burden as it causes serious life-threatening complications if left untreated. Chronic diseases are considered as the silent pandemic, being the leading cause of disability and mortality worldwide (Abdulaziz et al., 2024). Patients with chronic disease conditions like diabetes not only have long-term complications such as coronary arterial disease, Diabetic neuropathy, Nephropathy, Retinopathy, Cellulitis, Sexual dysfunction, but also have short-term illnesses, including hypoglycemia, fatigue, frequent infections, and mood disturbances due to frequent glucose spikes every day, which causes poor quality of life.(Farmaki et al., 2020) Poor compliance with medications and unhealthy inactive lifestyle choices cause a high proportion of diabetes with poor glycemic control (Najeed et al., 2022). Diabetes is a lifestyle disease that needs lifestyle modifications such as physical activity, controlled diet, regular medications, regular monitoring of blood glucose levels for better glycemic control, and good quality of life, which improves overall health. Short-term daily illness and the tedious nature of diabetes management lead to diabetes fatigue syndrome (DFS), which encourages resistance to diabetes management, resulting in stress and decreased quality of life (Kusnanto et al., 2020). Resilience, which is a psychological aspect of well-being, is defined as the ability to adapt to stressors and bounce back from challenging experiences, and it can interfere with a person's self-efficacy and self-management process (WHO Li & Guo, 2024; Vahedi, 2010).) It is crucial to manage diabetes, which is an illness that needs to be managed on a daily basis. The level of resilience of patients with DM determines their diabetic treatment outcome (Jia et al., 2022; Kapoor et al., 2024). Hence, developing diabetic resilience not only helps improve diabetic management and reasonable glycemic control but also improves the welfare of the patients and enhances overall quality of life. Studies investigating the psychosocial consequences of being stigmatized have reported that patients with diabetes experience feelings of fear, embarrassment, anxiety, and low self-esteem. These negative emotions can result in depression and are correlated with increased risk of complications (Nancy et al., 2017; Liu et al., 2017). Furthermore, in this case, developing resilience becomes an unavoidable aspect in managing diabetes. Resilience encourages individuals to believe in their ability to manage diabetes effectively, leading to better self-care practices and an improved Quality of life (Dubois et al., 2020). This study aims to assess the resilience capacity and quality of life among patients with Diabetes Mellitus. It is necessary because the Majority of guidelines on diabetes management care focus on the medical aspects of initial management without addressing the psychological needs of the individual and the society. DM patients especially people living in urban areas has knowledge, health facilities, life style, food habits, socioeconomic factors etc contributes better glycaemic control, were as in rural areas it is challenging due to poor diabetes management, low awareness, and inadequate healthcare access lead to a higher prevalence of undiagnosed complications (Kusnanto et al., 2020; Tara et al.,2022). Therefore, this current study aims to assess the level of resilience and quality of life among patients with DM in selected villages under the rural health and training centre.

Method

A quantitative, descriptive cross-sectional approach was used to assess the level of resilience and quality of life among patients with diabetes mellitus. This study was conducted in villages under the Rural Health and Training Centre, Vayalanallur, Sri Ramachandra Medical College & Research Institute. The target population was patients with Type II Diabetes Mellitus. A non-probability sampling method was employed to identify the patients with type II diabetes mellitus at selected villages. The sample size was derived based on the prevalence of diabetes Mellitus among adults (International Diabetes Federation, 2015). The estimated sample size was 368. 350 still provides a firm statistical foundation for the study. It provides a 95% Confidence level and a margin of error of around 5%, which is typically considered acceptable for a cross-sectional study.

$n = Z2 \times p \times (1-p) / d2$

n is the sample size

Z-score for the desired confidence level (1.96 for 95% confidence)

P is the estimated proportion of the population

d - margin of error (0.05)

n= (1.96)2×0.6× (1−0.6)/(0.05)2

n= 3.8416x0.24/ 0.0025

n=368

Description of the instruments

The instruments included demographic questions, which included sociodemographic variables (age, sex, educational status, marital status, occupational status, number of children, family history of diabetes, smoking history, food habits). The clinical variables of the patients, namely height, weight, BMI (Body Mass Index), hip circumference, waist circumference, recent (last 30 days) level of fasting blood sugar, Postprandial Blood Sugar level/ HbA1c, and treatment pattern, were taken from the patient's record. The level of resilience was assessed using the Devereux Adult Resilience Scale. The Devereux Adult Resilience Scale examines adults ' intrapersonal and interpersonal productive factors presumed to facilitate adaptation to psychosocial adversities. It is a three-point Likert scale that includes various domains that measure the resilience capacity of patients with diabetes mellitus in five domains, namely: relationships, Internal beliefs, Initiative, and self-control. The overall score was levelled to interpret the level of resilience. It has 23 questions (23x3=69. If the client scored 69 – 48, it was high resilience, 47-35 = moderate resilience, and >34 = poor resilience, and quality of life was measured using The Revised Version of DQOL (RV-DQOL13) Questionnaire. It has three domains. Satisfaction (6 questionnaire), Impact domain (4 questionnaire), and Worry domain (3 questionnaire). It is 5 5-point Likert scale, and its maximum score is 65, which indicates a better quality of life, and a minimum score of 13 shows a lesser quality of life. 65-45% = good QOL, 44-39% = satisfactory QOL and >35% = Poor QOL.

Validity

The Deverux Adult Resilience Scale (DARS) and Revised Version of the Diabetes

The Devereux Adult Resilience Scale (DARS) and the Revised Version of the Diabetes Quality of Life (RV-DQOL13). Questionnaires are standardized, open-access tools used to assess the level of resilience and quality of life among patients with diabetes mellitus. The DARS demonstrates high internal consistency, with a Cronbach's alpha of α = 0.762 for the full scale, indicating good reliability. The reliability of the RV-DQOL13 was computed for the following domains: the Satisfaction domain (0.922; 95% CI: 0.909–0.936), showing very high reliability; the Impact domain (0.781; 95% CI: 0.745–0.818), indicating moderate reliability; and the Worry domain (0.794; 95% CI: 0.755–0.832), also showing moderate reliability.

Ethical Consideration

The project has been approved by the IEC. Before beginning the study, the participants provided informed consent.

Results

The data analysis was performed using SPSS 22 version, with a statistical significance established at a p-value of <0.05. Descriptive statistics such as Frequency, Percentage, Mean, and Standard deviation were used to assess the selected background variables, level of resilience, and quality of life of the patients with type II Diabetes Mellitus. Inferential statistics, such as the Chi-square test, were used to determine the associations between the level of resilience and selected demographic variables.

Table 1. Mean and SD of clinical variables among patients with T2DM.

Clinical Variables	Mean	SD
Weight	65.05	8.79
Height	160.43	7.88
BMI	25.95	14.66
Hip Circumference	88.64	9.07
Waist Circumference	101.26	12.79

The mean weight of study participants was 65.05 with an SD of 8.79, and the mean height was 160.3 cm. The mean Body Mass Index (BMI) was 25.95 with a standard deviation of 14.66. Regarding Hip Circumference, the mean value was 88.64 with S.D of 9.07. The mean waist circumference was 12.79 with S.D of 12.79. The current study corroborates earlier studies conducted by Visscher et al. (2001) and Farmaki et al. (2021).

Table 2. Level of Resilience among patients with T2DM

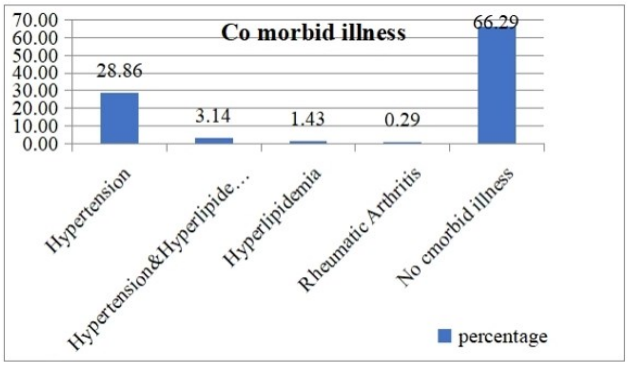
Level of Resilience	No.	Mean	SD
High Resilience(48-69)	345	58.79	4.63
Moderate Resilience(35-47)	5	44.5	1.73

Table 3. Mean and SD of Domain scores of QOL of life among patients with T2DM

Parameter	Mean	SD
Satisfactory Domain	0.53	0.11
Impact Domain	0.49	0.12
Worry Domain	0.43	0.15
Overall QoL	0.79	3.76

The background variable. The Majority of the samples (78%) were > 56 years, and 173 (49.43%) were males. Regarding the education of study participants, 80(22.86%) were completed Primary schooling,127(36.29%) were completed middle class education, 68(19.43%) were completed high secondary education, 16(4.57%) were studied up to higher secondary education, and 17(4.86%) were graduates. The maximum number of children in the study participants was three, i.e, 154(44%), 108 (30.86%) of them were addicted to the habit of smoking, and 260(74.29%) had a habit of alcoholism.

Figure 1. Percentage distribution of co-morbid illness among patients with T2DM at the selected village under RHTC, Vayalanallur.



Discussion

The majority of the samples (78%) were >56 years, and 173 (49.43%) were males. 80(22.86%) were Primary schooling,127(36.29%) were completed middle class education 68(19.43%) were high secondary education 16(4.57%) were studied up to higher secondary education and 17(4.86%) were graduates.154(44%) of them have three children and 108 (30.86%) of them were addicted to the habit of smoking and 260(74.29%) had a habit of alcoholism.

Regarding the education of study participants, 80 (22.86%) were completed Primary schooling,127(36.29%) were completed middle class education, 68(19.43%) were completed high secondary education, 16(4.57%) were studied up to higher secondary education, and 17(4.86%) were graduates. The maximum number of children in the study participants was three, i.e, 154(44%), 108 (30.86%) of them were addicted to the habit of smoking, and 260 (74.29%) had a habit of alcoholism.

This study result is closely consistent with a study conducted by Dutta (2024 on the prevalence and awareness of diabetes and risk factors for developing retinopathy among patients attending ophthalmic outpatient services at a selected hospital. The mean age of the study participants was 51 to 60 years.

87(69.6%) belonged to a nuclear family. 92(73.6%) were married and 41(32.8%) are uneducated (Dutta, 2024, Atreja & Verma, 2024, Alzarea et al., 2024)

Figure 1 depicts that 66.29% of the study participants had no comorbid conditions. This same result is evident in a study conducted by Iglay et al., (2016), which reported the same pattern of co-morbidity in patients with T2DM.

The mean weight of study participants was 65.05 kg with a standard deviation of 8.79; however, their average height was 160.3 cm. The mean Body Mass Index (BMI) was 25.95 with S.D of 14.66. The Hip Circumference mean value was 88.64 with S.D of 9.07. The mean waist circumference was 12.79 with S.D of 12.79. The current study corroborates earlier studies conducted by Visscher et al. (2001) and Dubois et al. (2020)

After analyzing the demographics and clinical variables, the study further assessed the level of resilience of the study participants, which is an essential part of DM management. A higher level of resilience score was observed among 98%(No.345) of the study participants. The score was 58.79 ± SD of 4.63. Only 2%(No.5) had a low level of resilience with a Mean and SD of 44.5±1.73. Comparable findings were documented in the study conducted by Yi et al. (2008). Thus, the patient with low and moderate resilience showed high HbA1C (r=.56), and Low level of resilience was associated with increased distress (r=-.55) (Maria De Nazaré De Souza Ribeiro et al., 2017; Dubois et al., 2020; Nur Widayati et al., 2024)

Low resilience was also associated with fewer self-care behaviours when faced with increasing distress (r = –.55). (Maria De Nazaré De Souza Ribeiro et al., 2017; Nur Widayati et al., 2024)

The Quality of Life was assessed using the Revised Version of the Diabetes Quality of Life (RV-DQOL13) Questionnaire, and the mean score was found to be 0.79±3.76. The results found variations across different domains, including Satisfactory Domain score was0.53±0.11, Impact Domain 0.49 ±0.12, Worry Domain 0.43±0.15 which aligns with the findings of Abida Nawaz Jamil Malik et al., (2020) who reported the similar result that resilience was associated with 17% in physical functioning, 29% in psychological functioning, 17% in environmental functioning, 30% in social dimension, and 29% in overall quality of life. However, another study reported similar results (Kuang et al., 2021), which aimed to assess the impacts of psychological resilience on self–efficacy and quality of life.

Conclusion

Diabetes mellitus is a chronic metabolic disease that needs management throughout life. It can affect a patient's level of resilience and quality of life. Therefore, Community Health Nurses should develop educational strategies to improve the quality of life of patients with type 2 diabetes mellitus.

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Author contributions

Conceptualization, P.R, H.N and S.M; Methodology, P.R and H.N ; Validation, P.R, and H.N ; Resources, K.R, J.J, & S.S; Writing – Original Draft Preparation, P.R, & H.N ; Writing—Review & Editing , K.R, S.S, and F.A

Conflicts of Interest

All authors clearly stated that they do not have any conflict of interest.

Data availability

Usually, the data sets are created during and/or analyzed throughout the entire study and are available fromthe corresponding author upon reasonable request.

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