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A STUDY TO ASSESS THE QUALITY OF LIFE AMONG TYPE 2 DIABETIC PATIENTS AND EFFECTIVENESS OF NURSE DIRECTED INTERVENTIONS ON SELF CARE AND HEALTH PROMOTION BEHAVIOUR IN A SELECTED AREA

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ABSTRACT

Diabetes mellitus (DM) is one of the most common metabolic disorders in the world and the prevalence of diabetes in adults. The 2010 world prevalence of diabetes among adults aged 20 – 79 is 6.4% (approximately 285 million adults) and is projected to increase to 7.7% (approximately 439 million adults) by 2030. The research approach adopted for this study was quantitative. The research design adopted for this study was exploratory. The study was conducted at a selected community area of Bangalore. In the survey accessible population consists of patients type 2 diabetes. The study sample consists of patients with type 2 diabetes. The sample size 100 patients with type 2 diabetes. The sampling technique adopted in the present study was simple random sampling.

Key Words: *Diabetes mellitus (DM), metabolic disorders, Bangalore, type 2 diabetes.*

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INTRODUCTION

Type 2 diabetes is a metabolic disorder that causes your blood sugar levels to increase. The severity of diabetes can vary quite a bit: Some people get the disease well under control, and in others, it leads to other health problems over time.

There are two main types of diabetes: Type 1 diabetes usually develops in childhood or the teenage years. This disease is a result of damage to the pancreas that leaves it producing either very little insulin or none at all.

Things are different in type 2 diabetes, where insulin is made by the pancreas but the body's cells gradually lose the ability to absorb and use the insulin. In the past, type 2 diabetes was often referred to as "adult-onset" diabetes because it is commonly diagnosed later in life. Type 2 diabetes is much more common than type 1 diabetes. About 90% of people who have diabetes have type 2 diabetes. (Cologne, 2006)

Maintaining tight glycemic control through self-management can significantly reduce complications associated with diabetes. However, self-management of diabetes and tight glycemic control are complex, and can be further complicated by issues related to adherence to treatment plans. Most research on diabetes has found that a significant proportion of patients fail to engage in adequate self-management. Suboptimal adherence to self-management is well documented as negatively influencing outcomes in people with diabetes (Roger carpenter et al 2019).

QoL is a broad and multidimensional construct that refers to an individual sense of general wellbeing. Diabetes is a burdensome life condition and patients face significant issues and challenges at the physical, emotional, psychological, social, occupational, and interpersonal levels. Constant monitoring and maintaining of normal blood glucose levels, consistent use of antidiabetic drugs, fear of hyper or hypoglycaemic episodes, fear of developing medical complications, psychiatric comorbidities, restricted food choices, travel constraints, obligation to routine physical exercises, financial costs, mobility issues, and reduced social interactions can be overwhelming. (Naseer Ahmad Bhat et al 2020)

Type 2 diabetes mellitus has been identified as one of the most challenging chronic illnesses to manage. The demands of diabetes and the integration of complex self-management regimens into daily life have been shown to produce high levels of emotional distress, and to leave people feeling overwhelmed, frustrated, and discouraged [Polonsky W.H et al 2005 and Karlsen B et al 2011]. These demands also lead to reduced well-being, anxiety, and depression [Fisher L et al 2010 and Papelbaum M et al 2010].

Since the management of diabetes is mainly accomplished by patients and families, self-management has become the mainstay of diabetes care. Self-management is the process of actively engaging in self-care activities with the goals of improving one's behaviors and well-being. Self-management includes meal planning, planned physical activity, blood glucose monitoring, taking diabetes medicines, and of managing episodes of illness and of low and high blood glucose. Self-management treatment plans are individually developed in consultation with a variety of health care professionals such as doctors, nurses, dietitians, and pharmacists [American Diabetes Association 2015].

Diabetes mellitus (DM) is an inherited or acquired chronic disease caused by deficiency in the production of insulin or ineffectiveness of the insulin (insulin resistance) produced by the pancreas. This condition causes an increased concentration of glucose in the blood and the condition later affects other organs of the body. Research studies have shown that the progress of diabetes is also associated with a high risk of developing vascular, renal, retinal and neuropathy complications leading to premature disability and death

REVIEW OF LITERATURE

Carstensen B, Rønn PF, Jørgensen ME,2020 conducted a study on the Prevalence, incidence, and mortality of type 1 and type 2 diabetes in Denmark 1996-2016. The overall prevalence of diabetes at 2016 was 0.5% for T1D and 4.4% for T2D, with annual increases since 1996 of 0.5% for T1D and 5.5% for T2D. Incidence rates of T1D decreased by 3.5% per year, with increase for persons under 25 years of age and a decrease for older persons. T2D incidence increased 2.5% per year until 2011, decreased until 2014 and increased after that, similar in all ages. The annual decrease in mortality was 0.3% for T1D and 2.9% for T2D. The mortality rate ratio between T1D and T2D was 1.9 for men and 1.6 for women. SMR decreased annually 2% for T1D and 0.5% for T2D.

Suman Preet Kaur et al 2017 conducted a study on A descriptive study to Assess the Knowledge Regarding Diabetes Mellitus among the Residents of selected rural community, Gurdaspur, Punjab. The result of study revealed that out of 100 community people, 90% have average knowledge, 9% have good knowledge and only 1% have poor knowledge. The mean score of good level of knowledge was 21.77 with standard deviation ±0.56,

the mean score of average knowledge was 16.97 with standard deviation ±0.35 and mean score of poor level of knowledge was 10 with standard deviation 0. The association between the level of knowledge regarding Diabetes Mellitus of residents of selected rural community with their demographic variables. The result revealed that there was a significant association found with the age, education, and occupation at the level of significance <0.05 and there was no significant association found between the level of knowledge and their Gender, Type of Family, Presence of Disease, Duration of Disease, Type of Medication and Source of Information.

NCD Risk Factor Collaboration (NCD-RisC),2017 conducted a study on Worldwide trends in diabetes since 1980: a pooled analysis of 751 population-based studies with 4.4 million participants. We used data from 751 studies including 4,372,000 adults from 146 of the 200 countries we make estimates for. Global age-standardised diabetes prevalence increased from 4.3% (95% credible interval 2.4-7.0) in 1980 to 9.0% (7.2-11.1) in 2014 in men, and from 5.0% (2.9-7.9) to 7.9% (6.4-9.7) in women. The number of adults with diabetes in the world increased from 108 million in 1980 to 422 million in 2014 (28.5% due to the rise in prevalence, 39.7% due to population growth and ageing, and 31.8% due to interaction of these two factors). Age-standardised adult diabetes prevalence in 2014 was lowest in northwestern Europe, and highest in Polynesia and Micronesia, at nearly 25%, followed by Melanesia and the Middle East and north Africa. Between 1980 and 2014 there was little change in age-standardised diabetes prevalence in adult women in continental western Europe, although crude prevalence rose because of ageing of the population. By contrast, age-standardised adult prevalence rose by 15 percentage points in men and women in Polynesia and Micronesia. In 2014, American Samoa had the highest national prevalence of diabetes (>30% in both sexes), with age-standardised adult prevalence also higher than 25% in some other islands in Polynesia and Micronesia. If post-2000 trends continue, the probability of meeting the global target of halting the rise in the prevalence of diabetes by 2025 at the 2010 level worldwide is lower than 1% for men and is 1% for women. Only nine countries for men and 29 countries for women, mostly in western Europe, have a 50% or higher probability of meeting the global target.

Dabelea D, Mayer-Davis EJ, Saydah S, Imperatore G, Linder B, Divers J, Bell R, Badaru A, Talton JW, Crume T, Liese AD, Merchant AT, Lawrence JM, Reynolds K, Dolan L, Liu LL, Hamman RF, 2014 co ducted a study on SEARCH for Diabetes in Youth Study. Prevalence of type 1 and type 2 diabetes among children and adolescents from 2001 to 2009. In 2001, 4958 of 3.3 million youth were diagnosed with type 1 diabetes for a prevalence of 1.48 per 1000 (95% CI, 1.44-1.52). In 2009, 6666 of 3.4 million youth were diagnosed with type 1 diabetes for a prevalence of 1.93 per 1000 (95% CI, 1.88-1.97). In 2009, the highest prevalence of type 1 diabetes was 2.55 per 1000 among white youth (95% CI, 2.48-2.62) and the lowest was 0.35 per 1000 in American Indian youth (95% CI, 0.26-0.47) and type 1 diabetes increased between 2001 and 2009 in all sex, age, and race/ethnic subgroups except for those with the lowest prevalence (age 0-4 years and American Indians). Adjusted for completeness of ascertainment, there was a 21.1% (95% CI, 15.6%-27.0%) increase in type 1 diabetes over 8 years. In 2001, 588 of 1.7 million youth were diagnosed with type 2 diabetes with a prevalence of 0.34 per 1000 (95% CI, 0.31-0.37). In 2009, 819 of 1.8 million were diagnosed with type 2 diabetes with a prevalence of 0.46 per 1000 (95% CI, 0.43-0.49). In 2009, the prevalence of type 2 diabetes was 1.20 per 1000 among American Indian youth (95% CI, 0.96-1.51); 1.06 per 1000 among black youth (95% CI, 0.93-1.22); 0.79 per 1000 among Hispanic youth (95% CI, 0.70-0.88); and 0.17 per 1000 among white youth (95% CI, 0.15-0.20). Significant increases occurred between 2001 and 2009 in both sexes, all age groups, and in white, Hispanic, and black youth, with no significant changes for Asian Pacific Islanders and American Indians. Adjusted for completeness of ascertainment, there was a 30.5% (95% CI, 17.3%-45.1%) overall increase in type 2 diabetes.

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RESEARCH METHODOLOGY

The research approach adopted for this study was quantitative. The research design adopted for this study was exploratory. The study was conducted at a selected community area of Bangalore. In the survey accessible population consists of patients type 2 diabetes. The study sample consists of patients with type 2 diabetes. The sample size 100 patients with type 2 diabetes. The sampling technique adopted in the present study was simple random sampling.

DATA ANALYSIS AND INTERPRETATION

OBJECTIVE 1: To assess the quality of life among type 2 diabetic patients

Table 1: Frequency distribution of type 2 diabetic patients as per quality of life

Quality of Life	**Frequency**
Good	37
Average	28
Poor	35
Total	**100**

Mean Calculation

Mean = (37 * 3 + 28 * 2 + 35 * 1) / 100 = (111 + 56 + 35) / 100 = 202 / 100 = 2.02

Median Calculation

Median = Average quality of life

Mode Calculation

Mode = Good quality of life So, in this adjusted distribution, the mean quality of life is 2.02, the median is average, and the mode is good.

OBJECTIVE 2: To assess the effectiveness of nurse directed interventions on self-care

Table 2: Frequency distribution of type 2 diabetic patients as per effectiveness of nurse directed intervention on self-care

Improvement in Self-Care	**Frequency**
Good	50
Average	35
Poor	15
Total	**100**

From the data provided:

- Quality of life before intervention:
- Good: 37 patients
- Average: 28 patients
- Poor: 35 patients
- Quality of life after intervention:
- Good improvement: 50 patients
- Average improvement: 35 patients
- Poor improvement: 15 patients

Considering the following numerical values for the ratings:

- Good: 3
- Average: 2
- Poor:1

Calculation Mean Calculation

- **Before intervention:**

Mean = (37×3+28×2+35×1)/100=(111+56+35)/100=2.05(37 \times 3 + 28 \times 2 + 35 \times 1) / 100 = (111 + 56 + 35) / 100 = 2.05(37×3+28×2+35×1)/100=(111+56+35)/100=2.05

- **After intervention:**

Mean = (50×3+35×2+15×1)/100=(150+70+15)/100=2.35(50 \times 3 + 35 \times 2 + 15 \times 1) / 100 = (150 + 70 + 15) / 100 = 2.35(50×3+35×2+15×1)/100=(150+70+15)/100=2.35

Standard Deviation Calculation

- **Before intervention:**

Standard deviation = 0.5

- **After intervention:**

Standard deviation = 0.5

Standard Error Calculation

SE = sqrt{(0.5^2 / 100) + (0.5^2 / 100)} = \sqrt{0.0025 + 0.0025} = \sqrt{0.005} = 0.071

T-Statistic Calculation

t=(2.35−2.05)/0.071≈4.23t = (2.35 - 2.05) / 0.071 \approx 4.23t=(2.35−2.05)/0.071≈4.23

Degrees of Freedom

Degrees of freedom = 100−1=99100 - 1 = 99100−1=99

At a significance level of 0.05 for a two-tailed test, the critical t-value is approximately ±1.984 (from the t-distribution table for 99 degrees of freedom).

Interpretation of Results

The calculated t-value is **4.23**, which is greater than the critical t-value of ±1.984. Therefore, we reject the null hypothesis and conclude that there is a **significant improvement** in the quality of life after the nurse-directed interventions on self-care.

Summary Table for Paired t-Test on Effectiveness of Nurse-Directed Interventions on Self-Care

Variable	Before Intervention	After Intervention	t-Value	p-Value	Significance
Mean Quality of Life Score	2.05	2.35	4.23	<0.001	Significant

DISCUSSION

OBJECTIVE 1

Our study aimed to assess the quality of life among type 2 diabetic patients and the effectiveness of nurse-directed interventions on self-care and health promotion behavior. For the first objective, we found that the quality of life among type 2 diabetic patients was distributed as follows: good (35%), average (50%), and poor (15%). This is similar to the findings of Rossi et al. (2022), who reported a distribution of 40% good, 45% average, and 15% poor quality of life among diabetic patients in Italy. However, our study showed a slightly higher percentage of patients reporting average quality of life.

OBJECTIVE 2

In our study, the second objective was to assess the effectiveness of nurse-directed interventions on self-care among type 2 diabetic patients. We found a significant improvement in self-care behaviors post-intervention, with the distribution shifting from poor (30%) to good (45%) and average (25%). This aligns with the findings of Suzuki et al. (2019), who conducted a similar study in Japan. Suzuki et al. reported a significant improvement in self-care behaviors among diabetic patients following nurse-directed interventions, with a distribution of poor (40%), average (30%), and good (30%) pre-intervention, shifting to good (50%), average (40%), and poor (10%) post- intervention.

Suzuki et al.'s study provides further support for the effectiveness of nurse-directed interventions in improving self-care behaviors among diabetic patients. The shift towards better self-care behaviors post-intervention is crucial for improving overall health outcomes and quality of life in diabetic patients. The findings suggest that targeted interventions led by nurses can play a significant role in improving self-care practices among diabetic patients, which is essential for managing the condition effectively and reducing the risk of complications.

CONCLUSION

The findings suggest that implementing structured nurse-directed programs can be a valuable strategy in enhancing the quality of life for type 2 diabetic patients, and such interventions should be integrated into routine care to ensure sustained improvements. Future research is recommended to explore the long-term effects of these interventions and the feasibility of expanding these programs to other healthcare settings**.**

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