



A CROSS-SECTIONAL STUDY TO ASSESS THE PREVALENCE OF NON-ADHERENCE TO MEDICAL MANAGEMENT OF DIABETES MELLITUS AMONG TYPE II DIABETES PATIENTS OF URBAN POPULATION OF MANGALORE CITY, KARNATAKA.

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ABSTRACT

Introduction: India was home to 212 million people with diabetes in 2022, the highest in the world. The study aims to determine the prevalence of non-adherence to diabetes management among patients with Type II diabetes attending urban primary health centres in Karnataka and to identify the factors contributing to this behaviour. Methodology: A quantitative cross sectional descriptive design was adopted for the study. Purposive sampling was used to select 500 type II diabetes patients attending the Urban PHCs in Mangalore city. The instruments used for the study include structured questionnaire to assess socio demographic and clinical variables and Diabetes Medication Adherence Scale to assess the prevalence of medication adherence. Result: There was a significant association of medication adherence with income ($\chi^2=4.645$, $p<0.05$), Fasting blood sugar value ($\chi^2=4.730$, $p<0.05$) and duration of diabetes mellitus ($\chi^2=6.104$, $p<0.05$). more than half of the samples (54.4%) had poor medication adherence followed by 34.6% with very poor adherence and 11.0% with moderate adherence with a mean medication adherence score of 33.34 ± 5.03 . Conclusion: The researcher concluded that understanding the psychosocial and behavioral factors such as lifestyle, emotions, and social support that influence non-adherence enables nurses to support patients more effectively in medication adherence and follow-up.

Key words: Diabetes, Non-adherence, Medical management.

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INTRODUCTION

Globally, 1 in 11 adults has Diabetes Mellitus (90% having Type 2 Diabetes Mellitus). In India, the number of people with diabetes has increased sharply over the past decade and is projected to continue rising. Diabetes is a metabolic condition that is characterized by chronic hyperglycemia and results from an interplay of genetic and environmental factors¹. India was home to 212 million people with diabetes in 2022, the highest in the world¹². Key challenges of diabetes management include lack of awareness among the population, poor diagnosis, limited access to quality care and medication adherence issues. Poor medication adherence leads to worsening of the disease and increased mortality. Non-adherence to diabetes medications is one of the critical public health challenges in diabetes management.^{2,3}

Adherence to diabetes mellitus management, which includes medication, diet, and lifestyle changes, is a significant challenge that contributes to poor glycemic control and increased complications. Worldwide, adherence rate for medication for diabetes vary between 36 and 93%^{4,7}. Reasons for poor adherence include perception of treatment, complexity of treatment and adverse effects⁵.

In Karnataka, as in many parts of India, urban primary health centers (PHCs) play a pivotal role in delivering healthcare to diabetic patients. However, adherence levels and factors influencing adherence in these settings are not well-documented⁶. Factors such as socioeconomic status, education level, duration of illness, medication side effects, lifestyle habits, and patient perception about the disease may all influence adherence behavior.⁷

Previous studies have shown that different factors contributed significantly to medication non-adherence. These factors can be categorized into four major categories including socio-demographic factors (such as age, sex, marital status, educational level, occupation, and income), medication-related factors (multiple drugs, long duration of treatment, and side effects of the drugs), disease-related factors (stage of the disease, presence of co-morbid condition and complication), and patient-provider communication factors⁸.

The study aims to determine the prevalence of non-adherence to diabetes management among patients with Type II diabetes attending urban primary health centres in Karnataka and to identify the factors contributing to this behaviour. Ultimately, the findings can help reduce diabetes-related complications, hospitalizations, and mortality, improve patients' quality of life, and provide evidence to support policymakers in strengthening diabetes management programs and resource allocation.

METHODOLOGY

The study was conducted to assess the prevalence of non-adherence to medical management of diabetes mellitus and assess the factors affecting the same among Type II diabetes patients of urban population of Mangalore city, Karnataka. A quantitative cross sectional descriptive design was adopted for the study. Purposive sampling was used to select 500 type II diabetes patients attending the Urban PHCs in Mangalore city. The patients who were attending Urban PHC, diagnosed with diabetes at least six months prior and those under medication were included. The data were collected by using two instruments. It includes a structured questionnaire to assess socio demographic and clinical variables which consist of 26 items including the socio demographic, clinical data and risk factors of Type II diabetes patients. The second one was Diabetes Medication Adherence Scale to assess the prevalence of medication adherence consist of total 12 questions using a Likert scale of 1-5, reflecting "every time" to "none of the time." The data were analysed using IBM SPSS version 22. Descriptive statistics were calculated in the form of frequencies, percentages, means, and standard deviations. The association between the prevalence of non-adherence to medical management of diabetes mellitus and socio-demographic as well as clinical factors was assessed using the Chi-square test and binary logistic regression analysis.

RESULTS

Table 1: Strength of association of medication adherence with socio personal, and clinical variables using binary logistic regression. N=500

| Variables | Medication adherence score | | Chi square test | Crude OR | Adjusted OR | p value |
|----------------------------------|----------------------------|-------|----------------------------------|------------------|------------------|------------|
| | ≤34.0 | >34.0 | | | | |
| Age in years | | | $\chi^2=1.389$, p=0.239 (NS) | 1.24 (0.87-1.76) | 1.82 (1.56-2.22) | 0.006* |
| 30- 59 | 129 | 112 | | | | |
| >60 | 125 | 134 | | | | |
| Gender | | | $\chi^2=0.090$, p=0.764 (NS) | 0.95 (0.66-1.35) | 1.12 (0.77-1.62) | 0.551 (NS) |
| Male | 103 | 103 | | | | |
| Female | 151 | 143 | | | | |
| Monthly family Income | | | $\chi^2=4.645$, p=0.039* | 1.02 (0.70-1.46) | 2.60 (1.90-3.36) | <0.001*** |
| ≤ Rs. 50,000 | 164 | 158 | | | | |
| > Rs. 50,000 | 80 | 98 | | | | |
| Fasting blood sugar value | | | $\chi^2=4.730$, p=0.031* | 1.20 (0.79-1.81) | 1.12 (0.90-1.38) | 0.315 (NS) |
| ≤ 150 mg/dl | 64 | 54 | | | | |
| >150 mg/dl | 190 | 192 | | | | |
| Duration of Diabetes | | | $\chi^2=6.104$, p=0.002** | 0.80 (0.52-1.22) | 2.12 (1.70-2.78) | 0.012* |
| ≤ 5 years | 52 | 60 | | | | |
| > 5 years | 202 | 186 | | | | |
| Body Mass index | | | $\chi^2=1.209$, p=0.271 (NS) | 0.82 (0.58-1.17) | 0.90 (0.75-1.08) | 0.259 (NS) |
| ≤ 24.9 | 130 | 138 | | | | |
| >24.9 | 124 | 108 | | | | |

Overall- B=0.969, p<0.001***

*Significant at 0.05 level, **Significant at 0.01 level, ***Significant at 0.001 level

Data presented in table 1 revealed that there was a significant association of medication adherence with income ($\chi^2=4.645$, p<0.05), Fasting blood sugar value ($\chi^2=4.730$, p<0.05) and duration of diabetes mellitus ($\chi^2=6.104$, p<0.05). The analysis by using binary logistic regression revealed that there was a significant association of medication adherence, with age [AOR- 1.82 (1.56–2.22), p = 0.006], income [AOR- 2.60 (1.90–3.36), p < 0.001] and duration of diabetes mellitus [AOR- 2.12 (1.70–2.78), p = 0.012].

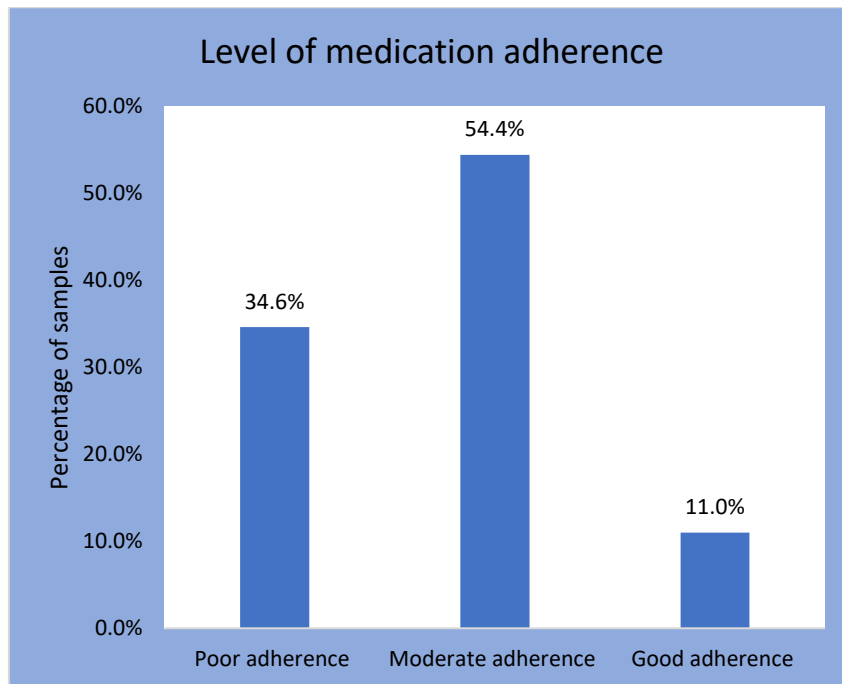


Figure 1: Percentage of samples according to level of medication adherence

The data presented in figure 1 revealed that more than half of the samples (54.4%) had poor medication adherence followed by 34.6% with very poor adherence and 11.0% with moderate adherence.

Table 2: Range, Mean, Standard deviation, Median and Mean percentage of samples according to medication adherence. N=500

| Range | Mean | Standard deviation | Median | Mean percentage |
|-----------|-------|--------------------|--------|-----------------|
| 23.0-43.0 | 33.34 | 5.03 | 34.0 | 69.5 |

Data presented in table 2 revealed that the mean medication adherence score was 33.34 ± 5.03 , score ranging from 23.0 to 43.0, with a median of 34.0 and mean percentage of 69.5.

DISCUSSION

The findings of the study were supported by a study conducted by Reddy K. K.P et al among 205 diabetic patients aged 18–60 years where good medication adherence was observed in 55.6% of patients. Nearly half of the diabetic patients demonstrated suboptimal adherence⁹. Another similar results was found in a study done by Prathap R. F et al a descriptive cross-sectional study based on prospective analysis of data collected from 150 cases in Government Headquarters Hospital, Tamil Nadu state, where 60% were adherent, while 40% showed low adherence. Apparently, the subjects aged below 50 years showed 100% adherence and age group of 80–89 showed the least adherence of 12.5%. Out of 83 (55%) males and 67 (45%) females enrolled in the study, 50 (60.24%) of the former and 40 (59.70%) of the latter were found to be adherent¹⁰. A hospital-based cross-sectional study was conducted by Olickal J J et al among persons with type 2 diabetes aged ≥ 18 years and on treatment in a public tertiary care center for at least one year. Poor medication-adherence (MGL score ≥ 1) was seen in 39% (95% CI 36.5–42.6%), and unsatisfactory FBS was in 58% (95% CI 55.1–61.4). Female gender (APR = 1.44, $p < 0.001$).¹¹

CONCLUSION

The researcher concluded that understanding the psychosocial and behavioral factors such as lifestyle, emotions, and social support that influence non-adherence enables nurses to support patients more effectively in medication adherence and follow-up. The study recommend that hospital nurses can establish regular adherence checks (e.g., medication review, blood sugar logs) as part of routine nursing assessment and by promoting adherence, the nurse helps reduce the risk of hospital readmissions and diabetes-related complications, leading to better patient outcomes.



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