Medication Adherence to Antidiabetic Regimen among Obese and Nonobese Diabetic Patients: A Comparative Study

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Abstract

Introduction Increase in insulin resistance among Indians makes them prone to type 2 Diabetes Mellitus (DM). DM is increasing drastically in Indians, so in a few years India will be the "diabetes capital of the world." The present study is planned to assess the existing levels of medication adherence among the obese and nonobese diabetic patients.

Methodology The quantitative research approach was adopted for the study. The study was conducted on 200 diabetic patients (100 obese and 100 nonobese) from P.B. M Hospital, Bikaner. The sample was selected by nonprobability sampling. The data were collected with the help of the demographic profile and the 8-item modified Morisky standardized tool.

Results The findings highlighted that the mean adherence score was 5.32 ± 1.643 among obese patients and 4.44 ± 2.315 among nonobese patients. The levels of medication adherence highlighted that the majority of obese diabetic patients (64%) had average adherence, followed by 25% who had poor adherence. While among the nonobese diabetic patients, the majority (44%) had good adherence, followed by 32% who had average adherence. There was a significant difference in adherence scores between obese and nonobese diabetic patients ($p = 0.0007$).

Conclusion Medication adherence was poor in obese patients compared to nonobese diabetic patients. There is a need to enhance adherence to diabetic medication among the population, especially among obese diabetic patients.

Keywords
- obese
- nonobese
- diabetic patients
- medication adherence

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Introduction

One of the biggest global public health concerns is noncommunicable diseases (NCDs). NCDs are chronic illnesses that cannot be transferred from one person to another. Diabetes mellitus (DM) is a chronic illness caused by either the body's inefficient use of insulin or the pancreas' insufficient production of it. One of the typical consequences of DM is elevated blood sugar levels.[1] The prevalence of diabetes has been rising faster in countries with lower and moderate incomes. People in South Asia are at significant risk of mortality and morbidity during the prime years of their productive lives because DM is developing in them at a young age. Asian Indians have a greater incidence of diabetes and prediabetes, according to the International Diabetes Federation.[2,3] Indians are more likely to develop type 2 diabetes due to their increased insulin resistance. India will become the "diabetes capital of the world" in a few years due to the sharp rise in DM among its citizens. Over 69 million individuals in India suffer from DM, and by 2040, that number is expected to rise to 140 million.[4] One of the biggest clinical issues in the treatment of diabetic patients is poor adherence to the prescribed course of action. The purpose of this study was to determine potential factors of poor medication adherence and to examine the degree of medication adherence to antidiabetic therapy. An estimated 425 million individuals worldwide suffered from diabetes in 2018, and that number is expected to rise to 629 million by 2040, with rises most common in developing countries.[5] Increased expenses for health care resources, particularly more frequent hospital stays, are caused by poor medication adherence. One of the main clinical issues in managing patients with diabetes worldwide is nonadherence to the prescribed treatment plan. About half of diabetic patients in affluent countries do not follow their prescribed treatment plans; in poorer countries, the situation is even worse. Patients with diabetes are more prone to prescription nonadherence, which jeopardizes treatment efficacy and safety and raises rates of morbidity and mortality. This raises the health care system's direct and indirect expenses significantly.[5,6] Diabetes treatment is complicated and needs for interdisciplinary medical attention in addition to patient education and self-management. Higher levels of adherence could result in lower total health care costs and resource utilization. On the other hand, low adherence rates raise the burden of diabetes on the community and the government and may lead to issues with health care utilization.[5] Additionally, poor treatment outcomes and higher health care expenses might result from nonadherence to long-term therapy. Regretfully, while prior research has established the level of adherence, few studies have examined the possible drivers of poor adherence, meaning that intervention is still necessary to increase level adherence. In order to ensure that measures are created and carried out to support adherence to diabetic therapies, it is crucial to understand the potential predictors of poor medication adherence. Before introducing additional therapies or other interventions, it is crucial to determine which patients have been impacted by which predictors of medication nonadherence.[5,7] The present study is planned to assess the existing levels of medication adherence among the obese and nonobese diabetic patients.

Primary Objective

The primary objective of the study was to determine the levels of medication adherence to diabetes medication among obese and nonobese diabetic patients.

Secondary Objective

The secondary objective was to identify the factors affecting levels of medication adherence to diabetes medication among obese and nonobese diabetic patients.

Methodology

In the present study, a quantitative approach and a descriptive survey design was adapted to compare the levels of medication adherence among obese and nonobese diabetic patients attending diabetes clinic for diabetes management. The present study was conducted at a diabetic center in SP Medical College, Bikaner, Rajasthan. The present study population comprised 100 obese and 100 nonobese diabetic patients attending diabetes clinic for diabetes management. The nonprobability purposive sampling technique was applied to selected samples from the research setting. Data collection was done with help of a structured demographic data profile and the 8-item modified Morisky standardized tool was used to assess adherence to diabetes medication. A standardized tool was applied for the data collection process, and formal permission was obtained from the authors.[8]

Procedure for Data Collection

Formal administrative approval was found obtained from concerning authorities for the pilot and final study. The body mass index (BMI) of each diabetic patient who came to the medicine outpatient was assessed. Patients who met the inclusion criteria were recruited and categorized into obese and nonobese groups for an interview schedule to assess medication adherence. Finally, data were collected from 200 diabetic patients (100 in each group) to assess medication adherence. There was no interference in routine care and treatment of the diabetic patients while collecting data.

Ethical Consideration

Permission for data collection was obtained from the ethical committee, SPMC & AG Hospitals, Bikaner, for the main study data collection. Written informed consent was obtained from the patients after the purpose of the study was explained to them. Confidentiality and anonymity was maintained throughout the study.

Observations and Results

The present study revealed that the majority of obese diabetic patients (64%) were had an average adherence, followed by 25% who had poor adherence. Only 11% of them had good adherence. Among the nonobese diabetic patients, the majority (44%) had good adherence, followed by

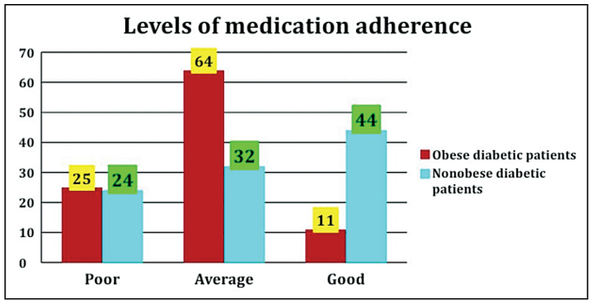

Fig. 1 Distribution of levels of medication adherence among obese and nonobese diabetic patients.

32% who had average adherence. Only 24% of them had poor adherence (►**Fig. 1**).

The association between levels of medication adherence and sociodemographic variables of obese and nonobese diabetic patients was calculated (►**Table 1**). Variables like gender ($\chi^2 = 4.671$, $p = 0.096$) and dietary pattern ($\chi^2 = 5.352$, $p = 0.068$) were not significantly associated with levels of medication adherence. Variables like age ($\chi^2 = 14.640$, $p = 0.023$), residence ($\chi^2 = 24.123$, $p \leq 0.000001$), comorbidity ($\chi^2 = 13.500$, $p = 0.001$), educational status ($\chi^2 = 21.801$, $p = 0.001$), and duration of illness ($\chi^2 = 19.663$, $p = 0.003$) were significantly associated with levels of medication adherence.

Discussion

The present study is planned to assess the existing levels of medication adherence among the obese and nonobese diabetic patients. The present study revealed that the majority of patients (64%) had average adherence, followed by 25% who had poor adherence. Only 11% of them had good adherence. Among the nonobese diabetic patients, the majority (44%) had good adherence, followed by 32% who had average adherence. Only 24% of them had poor adherence. In support of our research, a cross-sectional study was conducted by Mirahmadizadeh et al among 500 diabetic patients. The study highlighted that adherence to medication was low, moderate, and high in 5.4, 77.2, and 17.4% of patients, respectively.[9] The study found that the mean adherence score was 5.32 ± 1.643 among obese patients and 4.44 ± 2.315 among nonobese patients. The obtained p-value was 0.0008. The findings indicate that the medication adherence score between obese and nonobese diabetic patients was significantly difference. In this context, Dilla et al conducted a retrospective study of 294 patients and found that obese or severely obese patients were 2.2 times more likely to have low or moderate compliance compared with nonobese patients ($p = 0.002$).[10] This finding consistent with that of our study. Murwanashyaka et al performed a cross-sectional study among 200 adult patients with type 2 DM receiving care in the Medicale la Fraternite Clinic. The findings revealed that overweight or obese patients ($p < 0.02$) had higher odds of being nonadherent than underweight patients.[11] Another study by Mirahmadizadeh et al stated that high BMI was significantly and negatively associated with being perceived as adherent to medication ($p = 0.002$). Our research findings also revealed that medication adherence was poor among obese patients.[9] A cross-sectional study by Huizinga et al observed that diabetic patients with higher BMI have poor glycemic control.[12] The present

Table 1 Frequency and percentage distribution of diabetic patients according to sociodemographic data ($N = 200$)

Sl. no.	Sociodemographic variables	Characteristics	Group		*n*	%
			Obese	Nonobese		
1	Gender	Male Female	53 47	51 49	104 96	52 48
2	Age (y)	18–40 41–50 51–60 Above 60	12 29 31 28	36 23 20 21	48 52 51 49	24 26 25.5 24.5
3	Comorbidity	Present Absent	67 33	62 38	129 71	59.5 30.5
4	Residence	Rural Urban	37 63	52 48	89 111	44.5 55.5
5	Educational status	Illiterate Up to secondary Higher secondary Graduate and above	24 36 20 20	28 26 24 22	52 62 44 42	26 31 22 21
6.	Duration of illness (y)	1–5 6–10 11–15 Above 15	11 24 39 26	53 28 07 12	64 52 46 38	32 26 23 19
7.	Dietary pattern	Vegetarian Nonvegetarian	90 10	85 15	175 25	87.5 12.5

Note: Distribution of obese and nonobese diabetic patients according to the medication adherence scores.

study also found that variables like age ($p = 0.023$), residence ($p \leq 0.000001$), comorbidity ($p = 0.001$), educational status ($p = 0.001$), and duration of illness ($p = 0.003$) were significantly associated with levels of medication adherence. A cross-sectional study conducted by Mirahmadizadeh et al revealed that age had a significant influence on adherence to medication ($p = 0.017$).[9] A study conducted in rural Tamil Nadu by Venkatesan et al also found that illiteracy was associated with nonadherence.[13] The present study also observed that levels of adherence were associated with educational status. The findings were comparable to study by Rwegerera et al who found that gender ($p = 0.096$) and dietary pattern ($p = 0.068$) were not significantly associated with levels of medication adherence.[14] The present study supports of this finding.

Conclusion

The present study planned to assess the existing levels of medication adherence among obese and nonobese diabetic patients. The levels of medication adherence highlighted that the majority of obese diabetic patients (64%) had average adherence, followed by 25% who had poor adherence. Only 11% of them had good adherence. But among the nonobese diabetic patients, the majority (44%) had good adherence, followed by 32% who had average adherence. Only 24% of them had poor adherence. There was a significant difference in the medication adherence scores between obese and nonobese diabetic patients. There is a need to enhance the adherence to diabetic medication among the population. It is also necessary to pay attention to both obese and nonobese patients regarding medication adherence. The obese population generally has poor adherence to their medicines, so stakeholders and administrators have to make specific programs to enhance medication adherence. It will also be helpful in reducing the morbidity and mortality due to diabetes.

Limitations

The sample size of the present study is only 200 participants. This is a relatively small size to draw universal conclusions regarding medication adherence among obese and nonobese diabetic patients.

Conflict of Interest
None declared.

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