

ORIGINAL ARTICLE

Inadequate Care During the Management of Type-2 Diabetes Mellitus: Prevalence and Associated CharacteristicsSYED BAKHT RUIDAR¹, ZAINAB RIZWAN², AMIR BASHIR³, NADIYA KHAN⁴, MUHAMMAD SAJID KHAN⁵, YASIR MANSOOR⁶¹Endocrinologist, Tehsil Headquarter Hospital Wari, Dir Upper²Assistant Professor of Medicine, Fazaia Medical College Islamabad³MRCP, SCE Endocrine and Diabetes, Internal Medicine Consultant Buch Villas International Hospital Multan⁴Demonstrator, Ameer-ud-Din Medical College/PGMI Lahore⁵Associate Professor of Physiology, Shahida Islam Medical College Lodhran, Punjab⁶Healthcare Administrator, Department of Public Health, Health Services Academy IslamabadCorresponding author: Zainab Rizwan, Email: rbutt@yahoo.com**ABSTRACT****Objective:** The purpose of this study is to provide light on the reasons for and outcomes of inadequate treatment for type 2 diabetes.**Study Design:** Retrospective study**Place and Duration:** This Retrospective study was conducted at Fazaia Medical College Islamabad in the period from May, 2022 to October, 2022.**Methods:** Total 178 patients of T2 diabetes mellitus were presented. Age of the included cases were between 20-70 years. Informed written consent was obtained from all participants before to recording their demographic information, which included details such as comorbidities, body mass index (BMI), age, and smoking status. Lifestyle management, vaccination, pharmaceutical therapy, laboratory assessment, and physical examination are the five areas used to define inadequate care. SPSS 22.0 was used to analyze all data.**Results:** In all, ninety-eight (55.1%) cases were males and eighty (44.9%) cases were females. The mean age among patients was 53.13±5.44 years having mean BMI 26.11±6.76 kg/m². Majority of the cases 78 (43.8%) were had poor socio-economic status. 45 (25.3%) cases were smokers and HTN was found in 76 (42.7%) cases. Frequency of inadequate life style management 44 (24.7%), inadequate immunization 60 (33.7%), inadequate pharmacological therapy 80 (44.9%), inadequate physical examination 72 (40.4%) and inadequate laboratory tests were 48 (26.96%). Overall inadequate care was found in 135 (75.8%) cases.**Conclusion:** Treatment of type 2 diabetes is plagued by widespread problems due to inadequate care. It was shown that over 75.8% of people experienced at least one form of subpar care out of a possible five. Systematic, medical professional, and individual variables were all linked to subpar care delivery.**Keywords:** T2 DM, Adherence and Compliance, Diabetes Care**INTRODUCTION**

With an estimated diagnosis of Type 2 Diabetes Mellitus (T2DM) in one in eleven persons in the United States, this condition is quite common. [1] T2DM is also a crippling chronic condition that requires meticulous control since ineffective management can lead to serious consequences from diabetes. [2] When T2DM is poorly controlled, there is a risk for both microvascular consequences (neuropathy, nephropathy, and retinopathy) and macrovascular problems (stroke, heart disease, and amputation). [2] So, a crucial component of effective T2DM care is monitoring and managing complications caused by diabetes. [3] In its yearly revised Standards of Medical Care in Diabetes, the American Diabetes Association (ADA) offers recommendations for effectively monitoring and treating T2DM. [3] In order to prevent the disease state from getting worse, ADA guidelines encourage strict management of T2DM. This requires a rigorous yearly routine that includes treating diabetes-related complications, prescribing antihyperglycemic medications appropriately, making lifestyle changes, and getting regular screenings and preventative care. [3]

When these racial/ethnic minorities live in rural areas, where access to health care is still a problem, the health inequalities that Native Hawaiians and Filipinos experience are further aggravated. [4] In reality, just 17% of Americans live in rural areas, compared to a third of the population of the state of Hawaii. [5] In Hawaii's rural counties, there are more diabetes patients per doctor than in Honolulu County. [6] Due to their restricted access to non-urgent preventive treatment, such as diabetes self-management education, retinal screening, and cardiovascular risk management, rural individuals are more susceptible to developing significant and fatal diabetes-related complications. In the end, these difficulties could lead to a population that is generally less healthy and may need more tertiary care services, which would cost the health care system more money. [7]

Good glycemic management has the ability to limit both the microvascular and macrovascular consequences of diabetes,

according to prior research. [8] Nevertheless, between 40% and 60% of individuals globally still have poorly managed diabetes. [9] High glycemic control is challenging to achieve, and previous research has found that a variety of factors, including patients' age, gender, education level, weight, smoking status, marital status, length of diabetes, medications taken, and a host of other factors, can affect how well they manage their blood sugar. [10] It has proven difficult to determine which of these characteristics is most closely related to inadequate glycemic control, though. This is due to the fact that the earlier results are contradictory and have also shown that glycemic control and the factors affecting it varied between nations and between various ethnic groups. [11,12] In order to enhance diabetes care, it is clear that a greater knowledge of the variables impacting glycemic control is necessary. [13]

The main result of T2DM progression is recognised to be chronic problems, which lower patient quality of life, place a significant financial burden on the healthcare system, and raise the death rate for diabetics [14]. After accounting for age, those with T2DM have a mortality rate that is almost double that of people without the disease. Cardiovascular disease is the major cause of mortality for 50–80% of all diabetics, with cerebrovascular disease and renal failure also ranking highly. Diabetes often results in permanent handicap, with late complications being the main contributors to disability. Retinopathy, a kind of diabetic eye disease, is now one of the main causes of blindness in the globe. Furthermore, according to clinical epidemiologic research, foot ulcers occur before more than 85% of non-traumatic lower extremity amputations (LEAs) in diabetics [15].

Today, a wide range of treatment modalities, in particular pharmaceutical medications, are accessible, enabling doctors to fulfil the advised treatment objectives in virtually all patients [7]. The majority of patients, however, do not really meet the suggested treatment goals, whether they are those for the HbA1c level, blood pressure, or cholesterol levels. Even while some recent research showed that a very low HbA1c level might not be

advantageous for all patients, the "evidence-performance-gap," which describes the gap between data from big clinical trials and the everyday performance in real life, is noteworthy. Patients with diabetes unquestionably benefit most from proper blood sugar, blood pressure, and cholesterol level management [10].

Numerous distinct parts or procedures of care might be included in inadequate care, which can have negative effects. The failure to administer the proper medicine is among the most prevalent and severe indicators of subpar treatment. Up to 80% of heart attacks and strokes, for instance, are thought to result from failing to start or strengthen therapy in accordance with evidence-based recommendations. But having the proper medicine is only one aspect of receiving subpar treatment. Patients with chronic diseases in particular require a complicated, diverse regimen. The screening of Glycosylated Hemoglobin Test (A1c), cholesterol testing, and obtaining influenza vaccine are instances of insufficient treatment among T2D patients. The purpose of the current study was to analyse the prevalence and related features of non-compliance to the care-processes described by the ADA's Comprehensive Medical Evaluation in an effort to better understand insufficient treatment. With the intention of delivering conceptual findings that are clear and minimise information overload, the current study looked at insufficient care.

MATERIAL AND METHODS

This Retrospective study was conducted at Fazaia Medical College Islamabad in the period from May, 2022 to October, 2022 and comprised of 178 patients of type 2 DM. Informed written consent was obtained from all participants before to recording their demographic information, which included details such as comorbidities, body mass index (BMI), age, and smoking status. Participants with major medical (e.g., hemodialysis, pregnancy, etc.) or psychiatric disorders (i.e. due to contradictory medical recommendations or psychiatric problems) conditions were excluded from the study.

All participants had to be diagnosed with type 2 diabetes and between the ages of 20-70 years. Undertreatment in the type 2 diabetes population is the major result of interest. Inadequate treatment was defined in this study in accordance with the American Diabetes Association's (ADA) recommendations for treating type 2 diabetes, as presented in their in-depth medical review and described in detail in their yearly publication, Standards of Medical Care in Diabetes. 6 Given the impracticality of studying all 59 processes of treatment covered in the ADA's comprehensive medical examination, this study focused on a subset of those processes, namely nine procedures representing five broad categories. If the requirements outlined by the ADA were not satisfied, it was deemed that the care being provided was inadequate. These types of subpar medical attention were identified: 1) Passing a routine laboratory test, such as an A1c and cholesterol check. Two or more A1c tests over the last 12 months and one or more cholesterol tests within the past 12 months met the criteria for adequate A1c and cholesterol testing, respectively. 2) Pass a complete physical (here, it means a foot and an eye exam). Minimum requirements for both the eye and foot exams were one in the previous year and two years ago, respectively. Thirdly, pharmacologic therapy, which is defined as adhering to medication standards, such as for antihyperglycemic medication, high-intensity statin therapy for patients with established atherosclerotic cardiovascular disease (ASCVD), and hypertension treatment for patients with established hypertension. 4) Dietary management (or the existence thereof); 5) immunisation (or the receipt of an annual influenza shot). It was determined what percentage of the population in the United States falls into each of the five categories of poor care for diabetes on a nationwide scale (presence of inadequate care versus no presence). The overall quantity of subpar care was estimated using a different metric that took into account the sum of all the individual procedures of care that were found to be subpar and ranged from 0 (no inadequate care identified) to 9 (extremely high levels of inadequate care

(every single process of care identified as inadequate). All data were analyzed using SPSS 22.0. Categorical data were analyzed using frequency and percentage distributions.

RESULTS

In all, ninety-eight (55.1%) cases were males and eighty (44.9%) cases were females. The mean age among patients was 53.13±5.44 years having mean BMI 26.11±6.76 kg/m². Majority of the cases 78 (43.8%) were had poor socio-economic status. 45 (25.3%) cases were smokers and HTN was found in 76 (42.7%) cases.(table 1)

Table-1: Baseline data of enrolled patients

Variables	Frequency	Percentage
Gender		
Male	98	55.1
Female	80	44.9
Mean age (years)	53.13±5.44	
Mean BMI (kg/m ²)	26.11±6.76	
Socio-economic status		
Poor	78	43.8
Middle	60	33.7
High	40	22.5
Smokers		
Yes	45	25.3
No	133	74.7
HTN		
Yes	76	42.7
No	102	57.3

Frequency of inadequate life style management 44 (24.7%), inadequate immunization 60 (33.7%), inadequate pharmacological therapy 80 (44.9%), inadequate physical examination 72 (40.4%) and inadequate laboratory tests were 48 (26.96%).(figure 1)

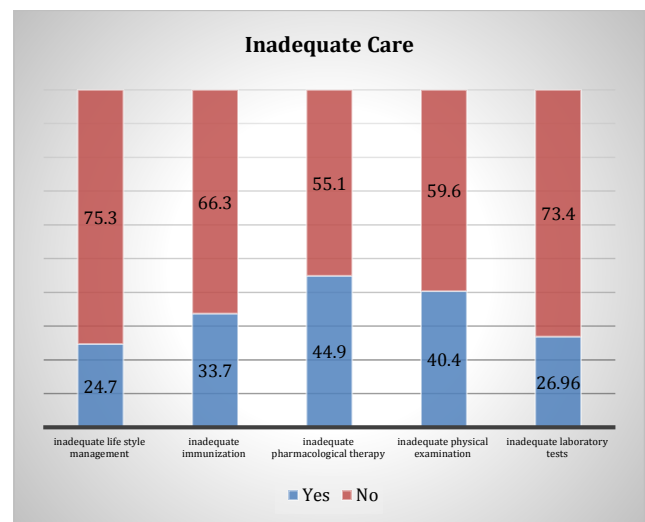


Figure-1: The prevalence of inadequate treatment for people with type 2 diabetes

Overall inadequate care was found in 135 (75.8%) cases.(table 2)

Table-2: Overall inadequate care

Inadequate	Frequency	Percentage
Overall Frequency		
Yes	135	75.8
No	43	24.2

DISCUSSION

The purpose of this research was to determine the prevalence of inadequate glycemic control as well as the variables that are

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