

A Critical Analysis Of Patient With Type-II Diabetic Mellitus - A Case Study Method

Veena D. Sakhardande^{a*}, Nevase Tejaswini^b, Kokare Vaishali^b, Edake Mayuri^b

^aAsso. Professor, Bharati Vidyapeeth (Deemed to be University), College of Nursing, Pune.

^bStudents, Bharati Vidyapeeth (Deemed to be University), College of Nursing,

ABSTRACT:

Introduction: Type-II Diabetes Mellitus is a progressive metabolic disorder that frequently leads to multisystem complications, including cardiovascular, renal & neurological disorders. Early identification and management of its complications are critical for improving patient outcomes. The incidence of diabetes mellitus has increased over the past several decades, making it a major public health concern in the modern period.

Objectives : to identify in-depth history of Patient with Type II Diabetes Mellitus and to analyses in-depth health status of patient with Type II Diabetes Mellitus along with assessment in-depth complication of Type II Diabetes Mellitus.

Material & Methods:

This study adopted mix method approach and the research design was non experimental case study method. Variables under study was critical analysis of patients with type II Diabetes Mellitus. Type II Diabetes Mellitus patients who was 70 years old, female on oral hypoglycemic drug & Insulin therapy. The data collection consist of collection of in-depth information and study of type II Diabetes Mellitus. The tool divided into two parts i.e. Socio demographic profile and assessment of History, Disease condition, Management and Complications.

Result: The case of a 70-year-old woman with a ten-year history of type –II Diabetes Mellitus had complications of hypertension, hypothyroidism, and chronic kidney disease. She was admitted with complaints of dyspnea on lying down, oliguria, and pedal edema. Her clinical history also included a pancreatic neuroendocrine tumor previously treated with peptide receptor radionuclide therapy. Laboratory investigations showed elevated creatinine i.e.7.2 mg/dL, thrombocytopenia, and electrolyte imbalance. The patient underwent hemodialysis and received multidisciplinary care including pharmacologic therapy, dietary counseling, and foot care education. Her condition improved significantly, indicating a favorable prognosis with appropriate management.

Conclusion: This case underscores the importance of an integrated approach in managing type-II Diabetes Mellitus with multisystem involvement. Early identification of complications and timely dialysis improved the patient's condition, emphasizing the role of coordinated nursing and medical care in chronic disease management.

Keywords: Type- II Diabetes Mellitus, chronic kidney disease, hemodialysis, hypertension, neuroendocrine tumor, nursing care

INTRODUCTION

Type –II Diabetes Mellitus is a chronic, progressive disease associated with insulin resistance and impaired insulin secretion. It accounts for over 90% of all diabetes cases globally and is a major contributor to end-organ damage involving the kidneys, cardiovascular system, eyes, and nerves¹. The International Diabetes Federation estimates that over 463 million adults are affected globally, with numbers expected to rise significantly in the coming decades². India, currently the second-highest contributor to the global diabetic population, has over 77 million people living with diabetes, with a large proportion remaining undiagnosed.³ Chronic kidney disease is one of the most serious complications of uncontrolled Type –II Diabetes Mellitus and can lead to dialysis dependency if not managed appropriately⁴. Multisystem complications, particularly in elderly patients, often coexist and complicate disease management. This case report presents a comprehensive analysis of a patient with Type –II Diabetes Mellitus and multiple comorbidities, emphasizing the need for early intervention and patient-centered care.⁵

Objectives: to identify in-depth history of Patient with Type II Diabetes Mellitus and to analyses in-depth health status of patient with Type II Diabetes Mellitus along with assessment in-depth complication of Type II Diabetes Mellitus.

Need of the Study: The incidence of diabetes mellitus has increased over the past several decades, making it a major public health concern in the modern period. The disease is prevalent but can have devastating consequences.⁶

Macrovascular complications of diabetes mellitus include coronary heart disease, stroke, and peripheral artery

disease. Diabetic kidney disease, retinopathy, and peripheral neuropathy are examples of microvascular complications. A significant risk of mortality is associated with heart failure, which is a common early symptom of cardiovascular disease in individuals with type 2 diabetes mellitus.⁷

Although there is still a significant illness burden associated with these conventional consequences of diabetes mellitus, the prevalence of these disorders is decreasing as diabetes treatment improves. Instead, as patients with diabetes mellitus live longer, they become more vulnerable to a variety of problems. According to population-based research, vascular disease is no longer the leading cause of mortality among persons with diabetes mellitus. Cancer is now the major cause of death among persons with diabetes mellitus in various countries or regions (hereinafter referred to as 'countries/regions'), and the proportion of dementia-related fatalities has increased since the turn of the century.⁸

It's important to learn & understand all aspects of Diabetes Mellitus to provide quality care.

This study is important in the nursing field because it addresses the growing global challenge of Type 2 Diabetes Mellitus by using a case study approach to provide an in-depth, holistic understanding of individual patient experiences that are frequently overlooked in larger epidemiological studies. This research aims to enhance nursing interventions by critically analyzing their effectiveness in real-world scenarios, improving patient self-management through insights into adherence factors, and addressing the significant psychosocial impact of type II diabetes mellitus. By bridging the gap between theory and practice, this study will contribute valuable, nuanced knowledge to nursing, ultimately promoting individualized care and improving outcomes for patients with type II diabetes mellitus.⁹

Aim of the Study:

To identify in-depth history of Patient, analyses in-depth health status of patient, assess in-depth complication of Type II Diabetes Mellitus and association of demographic variables with health status and complications of Type II Diabetes Mellitus.

MATERIAL & METHODS:

This study adopted mix method approach and the research design was non experimental case study method. Objectives of study were, to identify in-depth history of patient, to analyse in-depth health status of patient, to assess in-depth complication of Type II Diabetes Mellitus and to find association of demographic variables with health status and complications of Type II Diabetes Mellitus. Variables under study was critical analysis of patients with type II Diabetes Mellitus. Type II Diabetes Mellitus patients who was 70 years old, female on oral hypoglycemic drug & Insulin therapy. The data collection consist of collection of in-depth information and study of type II Diabetes Mellitus. The tool divided into two parts i.e. Socio demographic profile and assessment of history, disease condition, management and complications.

A 70-year-old female was admitted to the intensive care unit of a tertiary care hospital with a primary diagnosis of Type -II Diabetes Mellitus, chronic pancreatitis, and chronic kidney disease. She presented with acute complaints of fever and chills persisting for four days and loose stools for the preceding two days, additional symptoms included dyspnea on lying down, oliguria for the last eight days, and bilateral pedal edema.

Her medical history revealed a 10-year history of Type -II Diabetes Mellitus, managed with subcutaneous human Actrapid insulin. She was also hypertensive for the past three years and had been diagnosed with hypothyroidism one and a half years ago, for which she was taking oral thyroxine 100 mcg daily. Her clinical history was further complicated by previous uremic seizures and a diagnosed pancreatic neuroendocrine tumor. She had received three cycles of peptide receptor radionuclide therapy, initiated on 30th November 2022 and concluded on 3rd May 2023. The therapy was discontinued due to rising serum creatinine levels, suggesting renal compromise.

She resided in a nuclear family of four, with a positive family history of diabetes mellitus in her father. On examination, she was alert and oriented. Her blood pressure was 160/90 mmHg, pulse 97 beats per minute, respiratory rate 21 per minute, and SpO₂ was 98% on room air. Neurological Status was stable, with normal motor power and a Glasgow Coma Scale score of 15/15.

RESULT

Table No: 1 **Physical Examination:**

Parameter	Finding	
	Day-1	Day-2
Blood Pressure	160/90 mmHg	150/90mmHg
Heart Rate	97 bpm	88 bpm
Respiratory Rate	21/min	20/min
SpO ₂	98%	98%
Glasgow Coma Scale (GCS)	15/15	15/15
Motor Power	Normal	Normal
Sensory Perception	Normal	Normal

Table No.1 highlights on basic parameters after physical examination

Table No: 2 Laboratory Investigations:

Investigation	Result
Hemoglobin	9.4 g/dL
WBC Count	4500 /cumm
Platelet Count	2.74 L/cumm
Sodium	138 mEq/L
Potassium	5.7 mEq/L
Blood Urea	30 mg/dL
Serum Creatinine	7.2 mg/dL
Thrombocytopenia	21000
Urine Protein	2+
Urine Glucose	Trace

Table No.2 highlights on Laboratory investigations.

Prognosis and Management:

The patient underwent a 4-hour session of hemodialysis with an ultrafiltration rate of 2–3 liters and a blood flow of 200 mL/min, along with 5000 IU of heparin. During dialysis, she received a blood transfusion (B positive). Post-dialysis, her respiratory distress reduced, urine output improved, and her overall condition stabilized. Her medication regimen included Inj. Lantus 6 IU at night, Tab. Thyroxine 100 mcg, Tab. Sobosis Forte TID, Tab. Sodamint TID, Cap. Ecosprin 75 mg OD, Inj. Cefuroxime 1.5 g, Cap. Flovite MB BID, and Cap. Gemcal OD. Oxygen support was tapered from 6 L/min via face mask to 2 L/min via nasal prongs over three days.

Daily assessments showed progressive improvement in vital parameters. Nursing care focused on monitoring fluid balance, maintaining oxygenation, preventing infection, and administering medications. Health education was provided regarding insulin administration, dietary modification (low-sugar and low-protein diet), and importance of physical activity, foot care, and routine follow-up.

DISCUSSION:

Type II Diabetes Mellitus is increasingly recognized as a systemic disease with widespread impact on multiple organ systems. This case illustrates a particularly complex interplay of Type II Diabetes Mellitus, chronic kidney disease, hypertension, hypothyroidism, and a neuroendocrine tumor, which collectively contributed to the patient's acute decompensation.¹⁰

Comorbidities, including hypothyroidism, which can mask hypoglycemia and contribute to dyslipidemia and weight gain^{9,10} Moreover, hypertension, a common co-traveler with diabetes, increases glomerular capillary pressure, accelerating renal damage.¹¹

Hemodialysis was pivotal in stabilizing this patient's clinical condition. The timely initiation of dialysis not only addressed uremic symptoms but also reduced fluid overload, improved electrolyte imbalances, and reversed oliguria. Studies suggest that early referral and dialysis initiation in Chronic Kidney Disease patients can lead to better survival and reduced hospitalization rates^{1, 11}. However, in elderly diabetic patients, the decision to initiate dialysis must be carefully weighed against potential risks, including cardiovascular events

and infection, which remain the leading causes of morbidity and mortality in this population¹².

Another critical dimension in this case was the role of nursing and patient education in long-term management. Studies have shown that patient-centered nursing interventions significantly improve outcomes in chronic diseases like diabetes and Chronic Kidney Disease by promoting medication adherence, dietary compliance, and self-care behavior^{12,13}. In our case, comprehensive health education covered insulin administration, dietary modifications (especially low-protein and low-sugar diets), physical activity, and foot care—key elements for preventing further complications. According to Hackel et al. [10], such holistic care not only improves clinical outcomes but also enhances patient satisfaction and quality of life.

Moreover, a growing body of evidence emphasizes the need for multidisciplinary care, involving endocrinologists, nephrologists, dietitians, nurses, and patient caregivers. A team-based approach helps address the complex clinical needs of elderly patients with multiple comorbidities. For instance, integrating dietary counseling and renal function monitoring can slow the progression of DKD, while involving mental health professionals may alleviate diabetes-related distress and improve adherence¹³.

Finally, it is worth noting that socioeconomic and psychosocial factors can significantly influence disease outcomes in type -II Diabetes Mellitus¹⁵ highlighted that patients' religious beliefs, family support, and financial constraints impact their perception of illness and engagement with treatment. The patient lived in a nuclear family and had a family history of diabetes, such psychosocial dynamics may have influenced her health-seeking behavior and adherence to follow-up care.

CONCLUSION:

The case of a 70-year-old woman with a ten-year history of type -II Diabetes Mellitus had complications of hypertension, hypothyroidism, and chronic kidney disease. She was admitted with complaints of dyspnea on lying down, oliguria, and pedal edema. Her clinical history also included a pancreatic neuroendocrine tumor previously treated with peptide receptor radionuclide therapy. Laboratory investigations showed elevated creatinine i.e. 7.2 mg/dL, thrombocytopenia, and electrolyte imbalance. The patient underwent hemodialysis and received multidisciplinary care including pharmacologic therapy, dietary counseling, and foot care education. Her condition improved significantly, indicating a favorable prognosis with appropriate management.

This case highlights the importance of early identification and management of multisystem complications in elderly diabetic patients. Timely initiation of dialysis, careful monitoring, and comprehensive nursing care contributed to clinical improvement. Patient education on medication adherence, lifestyle changes, and regular follow-up remains critical for long-term management. A multidisciplinary approach remains essential in preventing and managing complications of Type-II Diabetes Mellitus.

Data study statement: This study manuscript contains all data generated and analysed during this study.

Funding: This project was not funded by any of the agency.

Conflict of interest:

The authors certify that they have no involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this paper.

Ethical Approval: Ethical approval is given by Intuitional research & recommendation committee, Bharati Vidyapeeth (Deemed to be University), College of Nursing, Pune

Acknowledgement:

Most sincerely we would like to convey a deep sense of gratitude to participant, organisation and Bharati Vidyapeeth (Deemed to be University), College of Nursing, Pune for remarkable guidance and academic support during the study. At last, we are grateful about the support and help we got throughout the research study from our authority, faculty teams and our group members contribute to accomplishing the research study successfully.

REFERENCES

1. Goyal R, Singhal M, Jialal I. Type 2 diabetes. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2025.
2. Pradeepa R, Mohan V. Epidemiology of type 2 diabetes in India. *Indian J Ophthalmol*. 2021;69(11):2932–8.
3. Tomic D, Shaw JE, Magliano DJ. Emerging complications of diabetes mellitus. *Nat Rev Endocrinol*. 2022;18(9):525–39.
4. Spollett G. Case study of T2DM and complex comorbidities. *Diabetes Spectr*. 2003;16(1):32–6.
5. Nikpour S, Mehrdad N, Sanjari M, Aalaa M, Heshmat R, Khabaz Mafinejad M, Larijani B, Nomali M, Najafi Ghezeljeh T. Challenges of Type 2 Diabetes Mellitus Management From the Perspective of Patients: Conventional Content Analysis. *Interact J Med Res*. 2022 Oct 27;11(2):e41933.

6. Merola E, Grana CM. Peptide Receptor Radionuclide Therapy (PRRT): Innovations and Improvements. *Cancers (Basel)*. 2023 May 30;15(11):2975.
7. Mohan V, Pradeepa R. The global burden of diabetes and its vascular complications. In: Kartha CC, Ramachandran S, Pillai RM, editors. *Mechanisms of Vascular Defects in Diabetes Mellitus*. Springer; 2017. pp. 3–23.
8. Hackel JM. 'Patient-centered care' for complex patients with type 2 diabetes mellitus- analysis of two cases. *Clin Med Insights Endocrinol Diabetes*. 2013 Oct 17;6:47-61.
9. Anamika Shrivastava & VDS, quasi-experimental study to assess the effectiveness of intradialytic aerobic exercises on muscle cramps among patients undergoing haemodialysis in selected hospitals of Pune City, *International Journal of Health Sciences*, 6(S5), 5971–5975.
10. Shivani Enugomla Veena, Vaishnavi Kumbhar et al, “A Comparative study to assess the knowledge regarding Dental Status among the children in selected rural and urban areas.” *International Journal of Early Childhood Special Education (INT-JECSE)* DOI: 10.9756/INT-JECSE/V14I1.337 ISSN: 1308-5581 Vol 14, Issue 01 2022 PP:2833-2837.
11. Ranjana T at all , “Effectiveness of Selected Interventions on Stress Level among Nursing Students”, *International Journal of Science and Research (IJSR)* ISSN (Online): 2319-7064 Impact Factor (2012): 3.358 Volume 3 Issue 12, December 2014. Pp 2432-2435.
12. Banashree Hawaibam, Ranjana T at All, “ Effectiveness of Olive Oil Massage On Prevention Of Decubitus Ulcer Among Bedridden Patients” *International Journal Of Recent Scientific Research* Vol. 7, Issue, 5, Pp. 10933-10937, May, 2016, ISSN: 0976-3031.
13. Baum RP, Fan X, Jakobsson V, Yu F, Schuchardt C, Chen X, Zhang J. Long-term Nephrotoxicity after PRRT: Myth or Reality. *Theranostics*. 2024 Jan 1;14(2):451-459.
14. Putra ADM, Sandhi A. Implementation of nursing case management to improve community access to care: A scoping review. *Belitung Nurs J*. 2021 Jun 28;7(3):141-150.
15. Li Y, Liu S, Cai Y, Cun W, Zhang X, Jiang Y. Effectiveness of nursing interventions on patient experiences with health care: A systematic review and meta-analysis. *Int Nurs Rev*. 2024 Nov 27.