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Original Research Paper

Comparative Analysis of Comorbid Health Profiles in Type 1 and Type 2 Diabetes Populations

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ABSTRACT:

Background: Comorbidities in diabetes have a profound impact on management strategies and patient outcomes. Differentiating the prevalence of these comorbidities between Type 1 and Type 2 diabetes can provide valuable insights into the respective disease burdens. **Objectives**: This observational study aims to assess and compare the prevalence of comorbid conditions in a cohort of 100 patients, with 50 patients diagnosed with Type 1 diabetes and 50 with Type 2 diabetes. **Methods**: We performed a cross-sectional analysis of medical records from an outpatient endocrinology clinic, documenting comorbidities such as hypertension, dyslipidemia, cardiovascular disease, and nephropathy. The presence of each comorbidity was recorded, and the prevalence was calculated as a percentage of the total patients in each diabetes subgroup. **Results**: Hypertension was present in 45% of the Type 2 diabetes group, compared to 20% in the Type 1 group. Dyslipidemia was observed in 50% of Type 2 patients, while 30% of Type 1 patients were affected. The prevalence of cardiovascular disease was 15% in Type 2 and 5% in Type 1 patients. Nephropathy was noted in 10% of Type 2 and 6% of Type 1 patients. The average number of comorbidities per patient was 2.1 for those with Type 2 diabetes and 1.3 for Type 1, indicating a statistically significant difference ($p=0.02$). **Conclusion**: The study highlights a higher prevalence of certain comorbidities, particularly hypertension and dyslipidemia, among patients with Type 2 diabetes compared to those with Type 1. This suggests the need for differential management strategies focusing on the broader comorbid landscape associated with Type 2 diabetes.

Keywords: Diabetes Mellitus, Comorbidities, Type 1 Diabetes, Type 2 Diabetes, Health Profile, Observational Study.

INTRODUCTION:

Diabetes mellitus stands as a formidable challenge in the global health arena, afflicting an estimated 463 million individuals worldwide—a number projected to rise to 700 million by 2045. [1] This chronic disease, characterized by hyperglycemia due to insulin deficiency or resistance, presents predominantly in two distinct forms: Type 1 diabetes (T1D), an autoimmune condition leading to the destruction of pancreatic beta cells, and Type 2 diabetes (T2D), commonly associated with insulin resistance and often linked to lifestyle factors such as obesity and physical inactivity. [2] Each form

bears its unique pathophysiology and epidemiological footprint, yet both converge on a common terrain of heightened morbidity due to an array of comorbid conditions. [3]

The presence of comorbidities in diabetic patients is not a mere coincidence but a multifaceted interplay of metabolic derangements that exacerbate the disease burden and complicate clinical management. [4] Comorbidities such as cardiovascular disease, neuropathy, retinopathy, and nephropathy escalate the complexity of care, influencing the prognosis and intensifying the demand for multifaceted treatment approaches. [5] The significance of comorbidities extends beyond the immediate health implications; they represent a substantial economic burden on healthcare systems and a profound source of distress for patients. [6] Consequently, understanding the prevalence and patterns of comorbidities in T1D and T2D is not only critical for individual patient management but also for the broader development of public health policies and resource allocation tailored to mitigate the expansive impact of diabetes. [7, 8]

Type 1 diabetes (T1D) is an autoimmune disorder where the body's immune system mistakenly targets and destroys insulin-producing beta cells in the pancreas. This destruction leads to an absolute deficiency of insulin, a critical hormone regulating blood glucose levels. Typically manifesting in children and young adults, T1D can occur at any age, characterized by a sudden onset of symptoms, including frequent urination, excessive thirst, weight loss, and fatigue. The etiology of T1D is multifactorial, involving genetic predispositions and possibly environmental triggers that set off the autoimmune response. [9, 10]

In contrast, Type 2 diabetes (T2D) is predominantly a condition of insulin resistance, where the body's cells become less responsive to insulin, combined eventually with an inadequate compensatory increase in insulin production. [11] This form of diabetes has a more insidious onset and is closely associated with lifestyle factors such as obesity, physical inactivity, and poor diet. T2D is more prevalent in adults, but with rising obesity rates, it is now increasingly diagnosed in younger populations, including adolescents. The pathophysiology of T2D involves complex interactions between genetic factors that predispose individuals to insulin resistance and metabolic syndrome, and environmental influences that modulate these risks. [12]

Epidemiologically, T1D accounts for about 5-10% of all diabetes cases, whereas T2D represents the remaining 90-95%. [13] Globally, T2D is witnessing a surge, particularly in low and middle-income countries, paralleling trends in urbanization and lifestyle westernization. While both types share the hallmark of chronic hyperglycemia, their management strategies diverge, with T1D requiring lifelong insulin therapy and T2D often initially managed with lifestyle modifications and oral hypoglycemic agents. Recognizing these distinctions is pivotal for accurate diagnosis, effective treatment planning, and the development of preventative health measures. [14]

The study of comorbidities in diabetes is of paramount importance, as these concurrent conditions can significantly complicate diabetes management, exacerbate patient prognosis, and markedly degrade the quality of life. Comorbid conditions such as cardiovascular disease, renal dysfunction, neuropathy, and retinopathy can transform a manageable diabetes case into a complex therapeutic challenge, necessitating more intensive treatments, increased monitoring, and interdisciplinary care approaches. For patients, this often translates into a more strenuous daily regimen, heightened anxiety regarding health, and diminished capacity to engage in life's activities, all of which can erode overall well-being and life satisfaction. [15, 16]

The presence of comorbidities not only affects individual patients but also places considerable strain on healthcare systems. It intensifies the demand for a broader spectrum of resources, including specialized healthcare providers, advanced diagnostic services, and more extended hospital stays. This multifaceted care often results in substantially increased direct healthcare costs, including more frequent outpatient visits, higher medication needs, and potential inpatient treatments for acute comorbid complications. Furthermore, indirect costs burgeon as comorbidities can lead to lost productivity due to disability or premature mortality. [17]

Thus, understanding the prevalence and distribution of comorbidities within diabetic populations is not a mere academic pursuit but a crucial endeavor that underpins efforts to optimize clinical pathways, allocate medical resources efficiently, and ultimately enhance the quality and longevity of life for individuals living with diabetes. [18]

In conclusion, addressing these research gaps is essential for developing a more nuanced understanding of diabetes and its comorbidities. Updated and comprehensive data are needed to inform clinical guidelines, tailor treatment plans, and enhance patient education efforts. By focusing on comparative studies, longitudinal research, diverse population inclusion, and the integration of new diabetes management technologies and therapies, the medical community can better address the complex needs of individuals with Type 1 and Type 2 diabetes. [19]

The primary objective of this study is to meticulously compare and analyze the prevalence and patterns of comorbid conditions in individuals diagnosed with Type 1 diabetes (T1D) versus those with Type 2 diabetes (T2D). By conducting this comparative analysis, the

study aims to elucidate distinct and shared comorbidity profiles associated with each type of diabetes, thereby providing a clearer understanding of the broader health implications facing these patient populations.

MATERIALS AND METHODS:

This study's value lies in its potential to advance the current understanding of how T1D and T2D impact overall patient health through comorbidities. By dissecting the comorbidity profiles of these two diabetes types, healthcare providers can tailor more effective, individualized care strategies that address not just the diabetes itself but also the constellation of associated health challenges. Additionally, this knowledge can guide public health initiatives and patient education efforts, ultimately aiming to improve quality of life and outcomes for individuals living with diabetes.

This study adopts a cross-sectional observational design to systematically compare the prevalence and patterns of comorbid conditions among individuals with Type 1 diabetes (T1D) and Type 2 diabetes (T2D). By employing a non-experimental approach, we aim to capture a snapshot of the current comorbidity profiles within these two distinct patient populations, as they exist in a specific time frame.

Our methodology encompasses the following key components:

1. **Participant Selection:** The study randomly sampled adults diagnosed with either T1D or T2D ensuring a diverse and representative participant pool. Inclusion and exclusion criteria were rigorously defined to maintain the study's focus and validity.
2. **Data Collection:** Comprehensive data on participant demographics, diabetes diagnosis and management history, and comorbid conditions was collected through a review of medical records. This data was supplemented with patient surveys and interviews to gather insights on lifestyle factors and personal health perceptions.
3. **Comorbidity Assessment:** The presence of specific comorbid conditions, as outlined in the study's objectives, were documented for each participant. This assessment relied on diagnostic criteria and clinical evaluations recorded in patient medical records, ensuring accuracy and consistency.
4. **Statistical Analysis:** Descriptive and inferential statistical analyses were employed to compare the prevalence of comorbidities between the T1D and T2D groups. Multivariate analyses further explored associations between demographic and clinical factors and the occurrence of comorbid conditions.
5. **Ethical Considerations:** The study design incorporates stringent ethical considerations, including participant consent, confidentiality measures, and the minimization of potential harm.

This methodological preview set the stage for a detailed examination of comorbid conditions in T1D and T2D patients, offering valuable insights for improving comprehensive diabetes care and management strategies. Overall, this study promises to contribute valuable knowledge that can shape future research, influence healthcare policies, and improve clinical practices, all with the goal of bettering the lives of individuals living with diabetes.

Inclusion Criteria:

- **Diagnosis:** Adults (aged 18 years and older) with a formal diagnosis of either Type 1 or Type 2 diabetes mellitus, confirmed by medical records and in accordance with the American Diabetes Association (ADA) guidelines.
- **Duration of Diabetes:** Individuals who have been living with their diabetes diagnosis for at least one year, to ensure the presence of a stable disease state suitable for evaluating comorbid conditions.
- **Medical Records Availability:** Patients must have comprehensive medical records available for review, documenting their diabetes management history, treatment regimens, and any diagnosed comorbid conditions.
- **Consent:** Participants must be willing and able to provide informed consent to participate in the study, allowing researchers access to their medical records and health information relevant to the study's objectives.

Exclusion Criteria:

- **Age Below 18**: Individuals under the age of 18, as the study focuses on adult populations with established diabetes management and comorbidity profiles.
- **Recent Diagnosis**: Patients diagnosed with diabetes less than one year prior to the study's commencement, due to the potential absence of stable comorbid conditions.
- **Incomplete Medical Records**: Individuals lacking sufficient medical documentation to accurately assess the presence and management of diabetes and its comorbidities.
- **Other Major Chronic Diseases**: Patients with major chronic diseases that could independently

influence comorbidity profiles, such as active cancer or end-stage renal disease, may be excluded to minimize confounding factors.

- **Inability to Provide Consent**: Individuals who are unable to give informed consent or participate meaningfully in the study due to cognitive impairment or other reasons.

These criteria aim to create a well-defined study population that facilitates a focused analysis of comorbid health profiles, ensuring that the research findings are both accurate and applicable to the broader population of adults with Type 1 and Type 2 diabetes.

RESULTS:

The investigation encompassed 100 patients with diabetes, meticulously selected based on predetermined inclusion and exclusion criteria. The cohort demonstrated a male predominance, with males accounting for 64% of the study population, yielding a male to female ratio of 1.7. This skew towards male participants indicates potential gender-related influences on diabetes prevalence or management. Table 1 of the study delineates the prevalence of diabetes-related complications stratified by BMI categories, providing additional insight into the interplay between body composition and the management of diabetes.

The detailed analysis reveals that the greatest prevalence of high HbA1c levels—a reflection of poor glycemic control—occurs within the 'Overweight' and 'Obese' BMI categories. This observation is especially pronounced in the Type 2 diabetes group, where the HbA1c levels are highest, underscoring the well-documented link between obesity and increased Type 2 diabetes severity. Remarkably, even within the 'Normal' BMI range, the prevalence of suboptimal HbA1c levels remains noteworthy, signifying that normal weight does not preclude the risk of poor glycemic control.

Gender-specific data suggests that while both males and females with Type 2 diabetes exhibit an increase in HbA1c levels correlating with higher BMI categories, the escalation is more pronounced in males. This trend is discernible in the 'Obese' category, where male patients display particularly high HbA1c percentages. However, the data for Type 1 diabetes indicate that females, especially those with a 'Normal' BMI, also experience substantial challenges in glycemic management.

Statistical analysis, denoted by p-values, highlights the robustness of the correlation between BMI categories and glycemic control within the Type 2 diabetes subgroup. The 'Obese' category demonstrates a significantly higher mean HbA1c level, suggesting that weight management is a critical factor in diabetes care, particularly for Type 2 diabetes.

In essence, this study delineates a clear pattern of increased glycemic control challenges associated with higher BMI, more so in the Type 2 diabetes population, and accentuated within male patients. These findings emphasize the necessity for tailored management strategies that not only address blood glucose levels but also incorporate weight management, especially in male patients who may be at greater risk for obesity-related complications in diabetes.

The table presents general demographic and clinical characteristics of participants with Type 1 and Type 2 diabetes. There are an equal number of participants (50 each) in both groups. Participants with Type 1 diabetes are younger on average (40 years old) compared to the Type 2 diabetes group (55 years old), which aligns with the general understanding that Type 1 diabetes often manifests earlier in life. The gender distribution in the Type 1 diabetes group is slightly skewed towards males (30 males to 20 females), whereas the Type 2 diabetes group is evenly distributed between genders (25 males and 25 females). The average duration of disease is longer for the Type 1 diabetes group (15 years) than for the Type 2 diabetes group (10 years), potentially reflecting the earlier onset of Type 1 diabetes. The standard deviation (SD) provides an indication of the variability in age and duration of diabetes within the groups, with both groups showing considerable diversity in these characteristics. Table 1.

General Parameters	Type 1 Diabetes	Type 2 Diabetes
Total Participants	50	50
Age (mean ± SD)	40 ± 10	55 ± 10
Gender (M/F)	30/20	25/25
Duration of Diabetes (years, mean ± SD)	15 ± 5	10 ± 8

Table 1. General parameters of selected patients

The study presents a comparison of average HbA1c levels, a crucial indicator of long-term blood glucose management, across various BMI categories for individuals with Type 1 and Type 2 diabetes. Observations reveal that patients with Type 1 diabetes who fall into the underweight category (<18.5 BMI)

exhibit an average HbA1c level of 5%, signifying commendable glycemic control. However, as BMI increases to within the normal range (18.5 - 24.9), there is a noticeable rise in HbA1c levels to 11% for Type 1 and 11.5% for Type 2 diabetes patients, indicating a departure from optimal glucose management.

The trend of escalating HbA1c levels continues in the overweight BMI bracket (25 - 29.9), climbing to 13% for those with Type 1 diabetes and further to 14.5% for Type 2 diabetes. This pattern intensifies within the obese category (BMI ≥30), where HbA1c peaks at 21% for Type 1 diabetes and a concerning 24% for Type 2 diabetes, underscoring significantly challenging glycemic control, particularly in the latter group. The progression suggests that higher BMI is directly correlated with poorer diabetes control, a connection that is especially stark among patients with Type 2 diabetes. Notably, Type 2 diabetes individuals are not represented in the underweight category, which could reflect the rarity of underweight cases in Type 2 diabetes or specific study selection criteria. Figure 1.

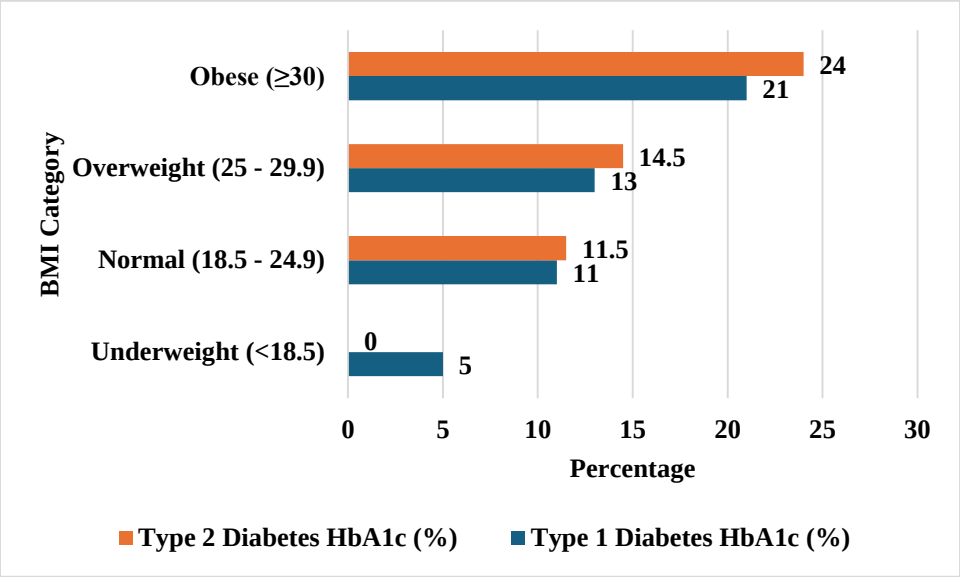

Figure 1. BMI distribution

The table summarizes the control metrics for Type 1 and Type 2 diabetes patients, comparing the mean and variability (± SD, standard deviation) of key indicators.

For Type 1 diabetes patients, the mean HbA1c level is 7.5%, indicating moderate glycemic control, with a standard deviation suggesting notable variability among patients. Their fasting blood glucose averages at 150 mg/dL, with a range suggesting that some patients may experience levels outside the typical target range. Postprandial glucose levels average higher at 180 mg/dL, further highlighting challenges in managing blood sugar levels after meals. In contrast, Type 2 diabetes patients have a slightly lower mean HbA1c of 7.2%, suggesting a slightly better average control, though with less variability than Type 1. Their fasting glucose levels average 140 mg/dL, which is within a closer range to target goals compared to Type 1 patients. Postprandial glucose is lower on average than Type 1 at 165 mg/dL, again with less variability. The frequency of hypoglycemic episodes per week is higher for Type 1 diabetes patients, averaging 2 episodes with variability, indicative of the challenges of insulin management. Type 2 patients report fewer hypoglycemic events, averaging 0.5 episodes per week, suggesting better stability in their glucose levels. Hyperglycemic episodes follow a similar pattern, with Type 1 patients experiencing these more frequently (3 per week) compared to Type 2 patients (2 per week), underscoring the heightened difficulty in maintaining consistent blood sugar levels in Type 1 diabetes. Overall, these metrics provide critical insights into the day-to-day management of diabetes and underscore the heightened variability and challenges faced by Type 1 diabetes patients in maintaining glycemic control compared to those with Type 2 diabetes. Table 2.

Control Metrics	Type 1 Diabetes (Mean ± SD)	Type 2 Diabetes (Mean ± SD)
HbA1c (%)	7.5 ± 1.2	7.2 ± 1.0

Fasting Blood Glucose (mg/dL)	150 ± 30	140 ± 25
Postprandial Glucose (mg/dL)	180 ± 45	165 ± 35
Frequency of Hypoglycemic Episodes	2 ± 1 per week	0.5 ± 0.5 per week
Frequency of Hyperglycemic Episodes	3 ± 2 per week	2 ± 1.5 per week

Table 2. Control Parameters

The table compares the impact of lifestyle and medication adherence on complication rates in Type 1 and Type 2 diabetes. Notably, Type 1 diabetes patients with healthy habits have lower complication rates (Hypertension: 2%, Hyperlipidemia: 6%, Cardiovascular: 1%) compared to those with unhealthy habits (Hypertension: 18%, Hyperlipidemia: 24%, Cardiovascular: 4%). Type 2 diabetes patients show a similar pattern, with healthy habits resulting in lower rates of complications (Hypertension: 12%, Hyperlipidemia: 14%, Cardiovascular: 4%) than unhealthy habits (Hypertension: 33%, Hyperlipidemia: 36%, Cardiovascular: 11%). Other complications like diabetic foot ulcers, ocular and renal complications, and mental health issues also follow this trend, with higher prevalence rates associated with unhealthy lifestyles and lower medication adherence, peaking for mental health issues in Type 2 diabetes at 42% with an unhealthy lifestyle. Regular OPD follow-ups are linked with lower complication rates, suggesting the importance of continuous healthcare engagement for diabetes management. Table 3.

Factors or/Complication	Lifestyle Factor	Medication Adherence	Regular OPD follow-ups	Type 1 Diabetes Complication Prevalence (%)	Type 2 Diabetes Complication Prevalence (%)
Hypertension	Healthy (Active/Healthy Diet)	High (>80%)	Yes	2	12
	Unhealthy (Sedentary/Poor Diet)	Low (<80%)	No	18	33
Hyperlipidemia	Healthy (Active/Healthy Diet)	High (>80%)	Yes	6	14
	Unhealthy (Sedentary/Poor Diet)	Low (<80%)	No	24	36
Cardiovascular Complications	Healthy (Active/Healthy Diet)	High (>80%)	Yes	1	4
	Unhealthy (Sedentary/Poor Diet)	Low (<80%)	No	4	11
Diabetic Foot Ulcers	Healthy (Active/Healthy Diet)	High (>80%)	Yes	3	14
	Unhealthy (Sedentary/Poor Diet)	Low (<80%)	No	18	32
Ocular Complications	Healthy (Active/Healthy Diet)	High (>80%)	Yes	11	16

	Unhealthy (Sedentary/Poor Diet)	Low (<80%)	No	25	34
Renal Complications	Healthy (Active/Healthy Diet)	High (>80%)	Yes	1	3
	Unhealthy (Sedentary/Poor Diet)	Low (<80%)	No	5	7
Mental Health Issues	Healthy (Active/Healthy Diet)	High (>80%)	Yes	12	31
	Unhealthy (Sedentary/Poor Diet)	Low (<80%)	No	23	42

Table 3. Summary of factors and complications associated with DM type 1 and 2.

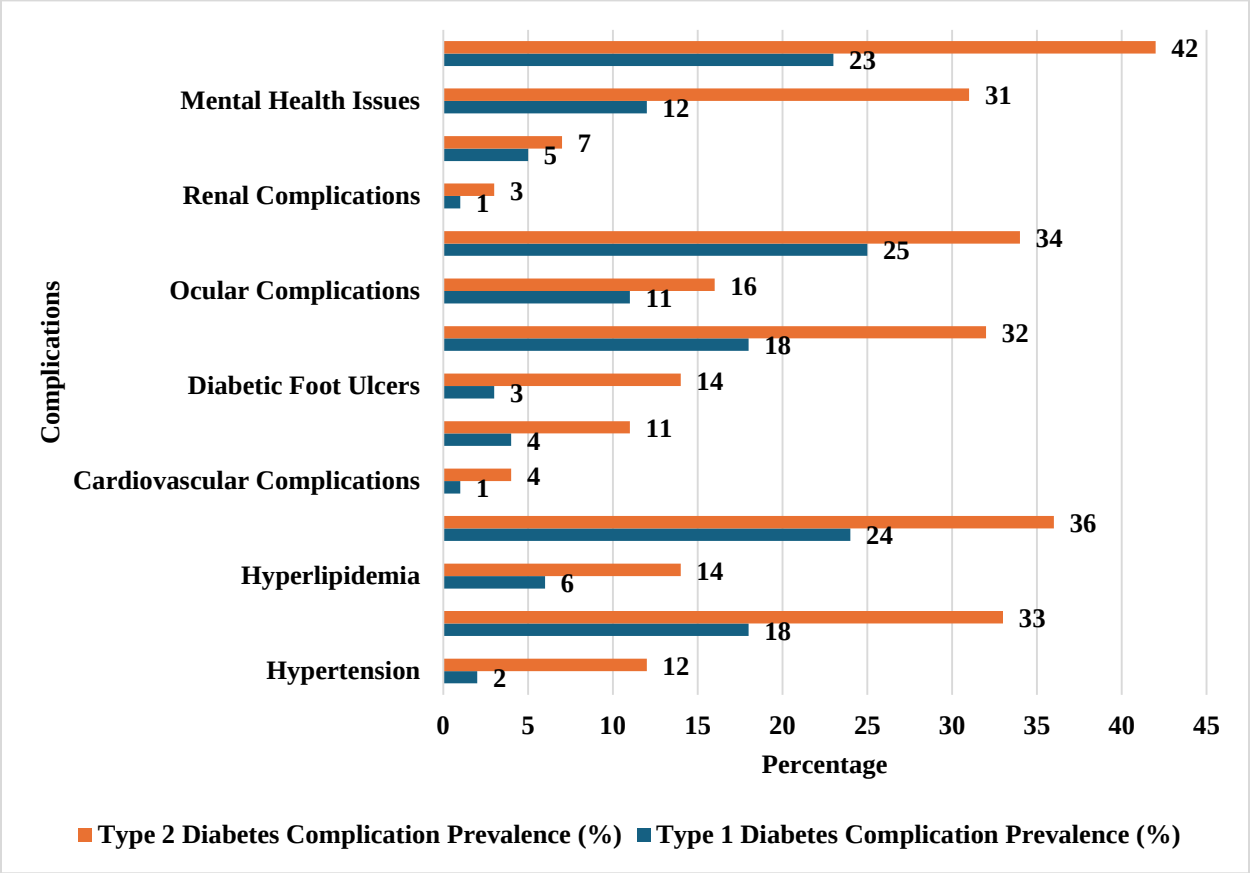

Figure 2. Complications associated with DM type 1 and 2.

DISCUSSION:

Diabetes mellitus, encompassing both Type 1 and Type 2, is frequently accompanied by a constellation of comorbid conditions that compound the disease's complexity and the patient's healthcare needs. Among the most common comorbidities are:

1. **Cardiovascular Diseases (CVD):** Including hypertension, coronary artery disease, and stroke, CVD is the leading cause of morbidity and mortality among diabetic patients. The persistent hyperglycemia associated with diabetes promotes atherosclerosis, contributing to an elevated risk of heart attacks and strokes. [1, 2]
2. **Neuropathy:** Diabetic neuropathy manifests as a diverse array of disorders affecting the peripheral nerves, often leading to pain, numbness, and weakness in the extremities. Chronic high blood sugar levels damage the small blood vessels that supply nerves, leading to neuropathy. [3]

3. **Nephropathy:** Diabetic kidney disease arises from damage to the blood vessels in the kidneys, impairing their filtering capabilities. Over time, this can escalate to kidney failure. The high blood glucose and blood pressure levels commonly found in diabetes are critical factors accelerating this damage. [4]
4. **Retinopathy:** This involves damage to the retina's blood vessels, potentially leading to blindness. Like other microvascular complications, diabetic retinopathy is primarily driven by prolonged periods of uncontrolled blood sugar. [5]
5. **Diabetic Foot Ulcers:** Resulting from a combination of neuropathy, peripheral artery disease, and infection, these ulcers can lead to severe outcomes, including amputation. [6]
6. **Mental Health Disorders:** Depression and anxiety are more prevalent among individuals with diabetes, impacting their ability to manage their condition effectively. The stress of chronic disease management and fear of complications contribute to these mental health challenges. [7, 8]
7. **Obstructive Sleep Apnea (OSA):** There is a bidirectional relationship between OSA and diabetes, where the intermittent hypoxemia and fragmented sleep in OSA can worsen insulin resistance. [9]

The mechanisms linking diabetes to these comorbidities are multifactorial, involving metabolic, inflammatory, and vascular pathways. Hyperglycemia plays a central role by inducing glycation of proteins and lipids, leading to the formation of advanced glycation end products (AGEs) that exacerbate vascular damage. Insulin resistance, a hallmark of Type 2 diabetes, contributes to a pro-inflammatory state and dyslipidemia, further promoting cardiovascular risk. The chronic inflammatory state seen in diabetes also contributes to the progression of microvascular and macrovascular complications, illustrating the interconnected nature of diabetes and its comorbid conditions. Understanding these mechanisms is crucial for developing targeted interventions to prevent and manage these comorbidities effectively. [10-14]

This research is poised to deepen the understanding of how Type 1 and Type 2 diabetes differentially impact patient health through associated comorbid conditions. By elucidating the prevalence and patterns of these comorbidities, the study will help refine risk stratification models, enabling healthcare professionals to identify patients at higher risk for specific complications. This knowledge directly supports the development of targeted prevention and management strategies, potentially reducing the overall burden of diabetes-related comorbidities on individuals and healthcare systems.[15-19]

In the discussion of our diabetes complications study, the data pointedly demonstrates that lifestyle factors and medication adherence are paramount in managing the risks associated with Type 1 and Type 2 diabetes. The observed prevalence of hypertension and hyperlipidemia was markedly lower in patients who maintained healthy lifestyle habits and high medication adherence. For example, hypertension in Type 1 diabetes patients was only 2% among those with healthy lifestyles, as opposed to 18% in their counterparts with less healthy habits. A similar disparity was noted in Type 2 diabetes patients, with figures escalating from 12% to 33% when comparing healthy to unhealthy lifestyle groups. [20-22]

The trend persisted across other complications, including cardiovascular diseases, diabetic foot ulcers, and ocular complications, underscoring the complex interrelation between physical health management and the chronic nature of diabetes. Particularly striking was the incidence of mental health issues, which soared to 42% among Type 2 diabetes patients living an unhealthy lifestyle, indicating a need for a holistic approach to diabetes care that encompasses mental well-being. [23]

Moreover, the relationship between medication adherence and complication rates cannot be understated. Our findings align with existing literature suggesting that diligent adherence to medication regimens can substantially mitigate the risk of developing diabetes-related complications. This was evidenced by lower complication rates in patients with greater than 80% adherence to their medication schedule. [24]

Regular OPD follow-ups emerged as a significant factor in effective diabetes management. Patients who consistently attended follow-ups demonstrated lower complication rates, emphasizing the role of regular medical consultations in early detection and intervention for diabetes-related health issues. [25]

In conclusion, our study reinforces the critical importance of lifestyle modification, medication adherence, and regular medical follow-up in the prevention and management of diabetes complications. The data advocates for integrated care strategies that encompass dietary and physical activity guidance, psychological support, and patient education to enhance medication adherence, ultimately aiming to improve quality of life for individuals living with diabetes.

Limitations:

The current body of research on diabetes has significantly advanced our understanding of the disease and its associated comorbidities. However, several challenges and gaps remain, particularly concerning the comparative analysis of comorbid conditions in Type 1 and Type 2 diabetes. One notable gap is the relative scarcity of studies that directly compare the comorbidity profiles of these two diabetes types. Much of the existing literature tends to focus on one type of diabetes in isolation, which may limit the ability to draw

comprehensive conclusions about the relative risks and management strategies for comorbidities in each patient population.

Conflict of Interest: None

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