



# Diabetes Complications and Contributing Factors: Findings from an Electronic Survey on Clinical, Behavioural, Psychological, and Management Aspects

Huda Al-Hamdan, Remal Abduaziz Asaad



**Abstract:** *Introduction: Diabetes is one of the most common and complex chronic diseases, requiring continuous management to prevent serious complications that affect the patient's quality of life. The research problem lies in the gap between drug therapy and the patient's daily behaviors and psychological state. Our study aims to determine the prevalence of diabetic complications (cardiac, ophthalmic, and neurological) and their relationship to laboratory indicators, health behaviors, and psychological disorders such as depression. Methods: This study employed a descriptive-analytical approach. We used an electronic questionnaire distributed to a random sample of 100 diabetic patients attending various hospitals. The study focused on collecting demographic data, laboratory indicators (HbA1c, LDL cholesterol, HDL cholesterol, and triglycerides), and assessing dietary habits, physical activity, and the patients' psychological state through a set of questions. We then statistically analysed the data to assess correlations among these variables. Results: The age group most affected was 50-69 years, accounting for 68% of participants. Clinical data revealed poor glycemic control, with approximately 83% of patients having HbA1c levels above 6.5%. Elevated triglyceride levels were also observed in 60% of the sample. Behavioral questionnaires revealed that 53% of participants did not undergo regular checkups, and obesity was prevalent, with 48.9% of participants having a body mass index (BMI) over 30. A notable finding was the strong correlation between psychological state and disease management, with 46% of participants experiencing depressive symptoms, which negatively impacted their treatment adherence. Cardiovascular (40%) and vascular (38.5%) complications were the most common among the sample. Conclusion: Our study revealed that diabetic complications are not solely linked to poor clinical control of blood sugar and lipid levels, but are significantly impacted by neglecting psychological aspects and the absence of a culture of regular follow-up. Therefore, based on our research, we recommend integrating psychological support as a fundamental component of the treatment plan for diabetic patients, and we emphasise the importance of health education on self-monitoring and adherence to dietary guidelines to minimise the health burden of advanced complications.*

**Keywords:** Diabetes Complications, HbA1c, Obesity, Medical Compliance, Cardiovascular Health, Psychological Well-being, Lifestyle Management.

**Nomenclature:**

LDL: Low-Density Lipoprotein

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HDL: High-Density Lipoprotein  
TG: Triglycerides  
HbA1c: Glycosylated Haemoglobin  
T1DM: Type 1 Diabetes  
T2DM: Type 2 Diabetes

## I. INTRODUCTION

Diabetes is a chronic, progressive disease and the most common chronic disease in the world. The disease results from insufficient insulin (absence of the hormone) due to impaired insulin secretion by the pancreas or impaired tissue response to insulin (insulin resistance). Diabetes is characterized by high blood sugar (glucose) levels, which can lead to serious damage over time. Failure to adhere to treatment and monitoring accelerates this damage. Disease complications affect many body systems, especially the heart, blood vessels, and kidneys. In the last 15 years, the number of deaths from diabetes has increased compared to previous years [1]. Diabetes is classified into types, and treatment varies accordingly: (Type 1, Type 2, Gestational Diabetes, Neonatal Diabetes, Diabetes Due to Endocrine Disorders or Certain Medications). The two most common types are Type 1 DM (T1DM), resulting from impaired insulin secretion, and Type 2 DM (T2DM), resulting from impaired tissue response. It is noteworthy that patients with Type 2 DM (non-insulin-dependent) often transition to Type 1 DM (insulin-dependent) due to treatment adherence [2].

## II. SURVEY RESULTS

A survey was conducted on a random sample of 100 individuals using an online questionnaire, and the results were as follows:

II.1 Demographic Characteristics	
Question 1: Gender	<ul style="list-style-type: none"> <li>Male: 52%</li> <li>Female: 48%</li> </ul>
Question 2: Age	<ul style="list-style-type: none"> <li>Under 30 years: 8%</li> <li>Between 30-49 years: 20%</li> <li>Between 50-68 years: 69%</li> </ul>
II.2 Anthropometric, Clinical Characteristics, Behavioural and Psychological Factors	
Question 3: Height	<ul style="list-style-type: none"> <li>Between 150-159 cm: 6%</li> <li>Between 160-170 cm: 49%</li> <li>Over 170 cm: 45%</li> </ul>
Question 4: Weight	<ul style="list-style-type: none"> <li>Between 66-80 kg: 33%</li> <li>Over 80 kg: 60%</li> </ul>
Question 5: Waist Circumference	<ul style="list-style-type: none"> <li>Between 89-95 cm: 32%</li> <li>Between 96-102 cm: 17%</li> <li>Over 102 cm: 36%</li> </ul>
Question 6: Have you been diagnosed with diabetes?	<ul style="list-style-type: none"> <li>Yes: 100%</li> </ul>



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Question 7: How long have you been diagnosed with diabetes?	<ul style="list-style-type: none"> <li>Less than 5 years: 22%</li> <li>Between 5-10 years: 46%</li> <li>More than 10 years: 32%</li> </ul>
Question 8: What type of diabetes were you diagnosed with?	<ul style="list-style-type: none"> <li>Type 1: 35%</li> <li>Type 2: 52%</li> </ul>
Question 9: What type of medication do you take for diabetes?	<ul style="list-style-type: none"> <li>Oral hypoglycemic agents: 66%</li> <li>Insulin: 34%</li> </ul>
Question 10: Do you consume processed foods?	<ul style="list-style-type: none"> <li>Yes: 53%</li> <li>No: 47%</li> </ul>
Question 11: If yes, have your medications been prescribed by a doctor?	<ul style="list-style-type: none"> <li>Yes: 64%</li> <li>No: 36%</li> </ul>
Question 12: How would you describe your daily dietary intake?	<ul style="list-style-type: none"> <li>Healthy: 14%</li> <li>Moderate: 69%</li> <li>Unhealthy: 17%</li> </ul>
Question 13: Do you avoid food high in sugar or fat?	<ul style="list-style-type: none"> <li>Always: 14%</li> <li>Sometimes: 62%</li> <li>Rarely: 24%</li> </ul>
Question 14: Do you participate in regular physical activities?	<ul style="list-style-type: none"> <li>Yes: 42%</li> <li>No: 58%</li> </ul>
Question 15: Are you a smoker?	<ul style="list-style-type: none"> <li>Yes: 35%</li> <li>No: 65%</li> </ul>
Question 16: Do you experience symptoms of sadness or depression?	<ul style="list-style-type: none"> <li>Yes: 46%</li> <li>No: 54%</li> </ul>
Question 17: Do you suffer from any of the following complications due to diabetes?	<ul style="list-style-type: none"> <li>Visual problems: 38.5%</li> <li>Neurological problems: 35.4%</li> <li>Cardiovascular problems: 40%</li> <li>Renal problems: 30.2%</li> <li>Non-healing wounds: 18.8%</li> <li>Foot problems (diabetic): 2%</li> </ul>
Question 18: Have you calculated your Body Mass Index (BMI)?	<ul style="list-style-type: none"> <li>Yes: 93%</li> <li>No: 7%</li> </ul>
Question 19: If yes, what is your Body Mass Index?	<ul style="list-style-type: none"> <li>Between 18.5 - 24.9: 10.6%</li> <li>Between 25 - 29.9: 40.4%</li> <li>Over 30: 48.9%</li> </ul>
Question 20: How would you describe your current weight?	<ul style="list-style-type: none"> <li>Obese: 42%</li> <li>Normal weight: 14%</li> <li>Overweight: 43%</li> </ul>
<b>II.3 Laboratory Tests</b>	
Question 21: Do you undergo regular medical check-ups?	<ul style="list-style-type: none"> <li>Yes: 42%</li> <li>No: 58%</li> </ul>
Question 22: What is your fasting blood sugar level?	<ul style="list-style-type: none"> <li>Between 180 -249 mg/dL: 41%</li> <li>Between 130 -179 mg/dL: 44%</li> <li>Between 110 -129 mg/dL: 9%</li> <li>Less than 110 mg/dL: 6%</li> </ul>
Question 23: What is your cholesterol level?	<ul style="list-style-type: none"> <li>Less than 200 mg/dL: 14%</li> <li>Between 200 -239 mg/dL: 48%</li> <li>More than 240 mg/dL: 38%</li> </ul>
Question 24: What is your triglyceride level?	<ul style="list-style-type: none"> <li>Less than 150 mg/dL: 9%</li> <li>Between 150 &amp; 199 mg/dL: 28%</li> <li>Between 200 -499 mg/dL: 60%</li> </ul>
Question 25: What is your HDL value?	<ul style="list-style-type: none"> <li>Less than 40 mg/dL: 57%</li> <li>Between 40 -59 mg/dL: 40%</li> </ul>
Question 26: What is your LDL value?	<ul style="list-style-type: none"> <li>Less than 100 mg/dL: 8%</li> <li>Between 100 -129 mg/dL: 14%</li> <li>Between 130 -159 mg/dL: 43%</li> <li>More than 160 mg/dL: 35%</li> </ul>
Question 27: What is your HbA1c value?	<ul style="list-style-type: none"> <li>Less than 5.7%: 2%</li> <li>Between 5.7 -6.4%: 15%</li> <li>More than 6.5%: 83%</li> </ul>
<b>II.4 Health Care</b>	
Question 28: Do you adhere to dietary and lifestyle modification programs to manage diabetes and its complications?	<ul style="list-style-type: none"> <li>Yes: 53%</li> <li>No: 47%</li> </ul>
Question 29: Do you have regular medical check-ups?	<ul style="list-style-type: none"> <li>Yes: 47%</li> <li>No: 53%</li> </ul>

## III. CONCLUSION

In conclusion, the results of this multicenter study show elevated rates of cardiovascular and visual complications (40%-38.5%, respectively) in the study sample, which are associated with high HbA1c and lipid levels. These findings highlight a deficiency in self-management among people

aged 50-69 (68% of the sample). Therefore, to reduce complications, pharmacological treatment should be integrated with psychological support and lifestyle management, which are essential for improving clinical outcomes, especially the high depression rates reaching 46% of the sample.

*Note:* The conclusion was reached based on survey results.

## A. Limitation

Our study is hospital-based and has a relatively small sample size.

## DECLARATION STATEMENT

As the article's author, I must verify the accuracy of the following information after aggregating input from all authors.

- **Conflicts of Interest/ Competing Interests:** Based on my understanding, this article has no conflicts of interest.
- **Funding Support:** This article has not been funded by any organizations or agencies. This independence ensures that the research is conducted objectively and without external influence.
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- **Data Access Statement and Material Availability:** The adequate resources of this article are publicly accessible.
- **Author's Contributions:** The authorship of this article is contributed equally to all participating individuals.

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