

Exploring The Prevalence And Risk Factors Of Diabetes Mellitus Among Nursing Students

Divya¹, Gyan Jyoti², Dr. Pawan Kumar³, Subjot Balan Natham⁴, Shreyasi Hui⁵

¹Tutor, Department of Medical Surgical Nursing, Faculty of Nursing, SGT University.

²Assistant Professor, Department of Medical Surgical Nursing, Faculty of Nursing, SGT University.

³Professor, Department of Medical Surgical Nursing, Faculty of Nursing, SGT University.

⁴Assistant Professor, Department of Medical Surgical Nursing, Faculty of Nursing, SGT University.

⁵Tutor, Department of Medical Surgical Nursing, Faculty of Nursing, SGT University.

Abstract

Introduction: Diabetes is a growing concern among young adults, including nursing students, due to stress, poor lifestyle, and irregular routines. Despite their medical knowledge, they remain at risk. Early detection and prevention are crucial, as these students will become future healthcare providers and role models for healthy living.

Aim: To explore the prevalence and identify the associated risk factors of diabetes mellitus among nursing students, with the goal of promoting early detection, raising awareness, and guiding preventive health strategies within this future healthcare workforce.

Material and Methods: This descriptive cross-sectional study at SGT University aims to assess the prevalence of diabetes mellitus among 202 nursing students. By collecting data at a single point in time using structured tools, the study identifies potential risk factors such as BMI and waist circumference. This approach ensures accurate, reliable results and supports early detection and prevention strategies for diabetes within this at-risk population of future healthcare professionals.

Result: Most participants (69.3%) were aged 19–20 years, and the majority were female (65.8%). A high percentage (94%) were enrolled in the B.Sc. Nursing 2nd year program, and 82.6% lived at home. Notably, 82.6% reported having previous knowledge about diabetes. The mean Body Mass Index (BMI) was 22.73, suggesting a generally healthy weight range. However, 21.8% of students were overweight, and 7.8% were underweight, indicating potential health risks on both ends of the spectrum. Waist circumference analysis showed that 35.5% of students were at risk and 19.7% were at high risk of developing diabetes-related complications. Significant associations between BMI and variables such as age ($p=0.036$), gender ($p=0.017$), and previous diabetes knowledge ($p=0.014$). Likewise, waist circumference was significantly associated with age ($p=0.029$), gender ($p=0.013$), and previous knowledge ($p=0.036$).

Conclusion: Most nursing students had a healthy BMI, a notable proportion were either overweight or underweight, posing potential health risks. Additionally, more than half had waist circumferences placing them in at-risk or high-risk categories for diabetes. Significant associations were observed between BMI and waist circumference with age, gender, and prior knowledge of diabetes. These findings emphasize the importance of early screening, awareness, and lifestyle interventions among nursing students, who are both vulnerable to diabetes and future healthcare providers responsible for promoting healthy behaviours within the broader population. Preventive action within this group is crucial.

Keywords: Prevalence, Risk Factors, Diabetes Mellitus, BMI, Waist Circumference

INTRODUCTION

Diabetes is a long-term health condition where the body has trouble using or making enough insulin, leading to high blood sugar levels. There are two main types: Type 1 and Type 2, with Type 2 being the most common. In recent years, diabetes has become a major health problem around the world, affecting people of all ages. According to the World Health Organization (2023), more than 537 million adults had diabetes in 2021, and this number is expected to rise sharply in the coming years. While diabetes used to mostly affect older adults, it's now becoming more common in young people, including college students. Unhealthy eating, lack of exercise, obesity, and stress are all reasons for this increase. Worryingly, many young adults—especially nursing students—may have pre-diabetes or diabetes without even knowing it.

Nursing students, in particular, represent a unique demographic subgroup. While they are expected to have above-average knowledge and awareness of health conditions like diabetes due to their educational training, they are not immune to the risk factors associated with the disease. The rigorous demands of nursing education, clinical rotations, night shifts, academic pressures, irregular eating habits, limited physical activity, and mental stress can all predispose nursing students to noncommunicable diseases (NCDs), including diabetes.

The early identification of diabetes or pre-diabetic conditions among nursing students is crucial, not only for their personal well-being but also because these students are the future healthcare providers. If left unchecked, diabetes can lead to long-term complications such as cardiovascular disease, neuropathy, nephropathy, retinopathy, and increased mortality. Moreover, healthcare professionals with unmanaged chronic illnesses may be at risk of impaired clinical performance, affecting the quality of patient care. Despite the known risk factors, the prevalence of diabetes among nursing students is an area that has received relatively limited research attention, especially in developing countries. Most existing studies focus on knowledge, attitude, and practice (KAP) toward diabetes or its management in the general population, with few studies specifically exploring the actual prevalence rates among student populations. A descriptive study aimed at assessing the prevalence of diabetes among nursing students can therefore serve as an essential foundation for targeted interventions, health promotion strategies, and the development of support systems within academic institutions.

Diabetes is a rapidly growing noncommunicable disease that poses a significant public health challenge worldwide. While commonly associated with older adults, an alarming rise in cases among younger populations—including college students—has been observed. Nursing students, despite their medical knowledge, often face stress, irregular schedules, poor diet, and lack of exercise, which are all risk factors for diabetes. Early detection and awareness are essential to prevent long-term complications. However, limited data exist on the actual prevalence of diabetes within this group. Assessing diabetes prevalence among nursing students is crucial not only for their personal health but also because they are future healthcare providers. Understanding their health status can inform targeted health interventions, promote preventive behaviours, and enhance their credibility as role models in promoting patient health. This study aims to fill this knowledge gap and support the development of effective wellness programs within nursing institutions.

METHODOLOGY

This study adopts a descriptive cross-sectional research design and will be carried out at the Faculty of Nursing, SGT University. The study population consists of nursing students enrolled across different academic years and programs. A sample size of 202 students has been determined for assessing the prevalence of diabetes mellitus in this group. This design enables the collection of relevant data at a single point in time, offering a clear snapshot of the current status of diabetes occurrence among nursing students. The selection of this design is appropriate for identifying potential risk factors and determining associations without manipulating any variables. Data will be collected using a structured tool that includes socio-demographic variables, Body Mass Index (BMI) measurement, and waist circumference. These parameters will help identify individuals who may be at higher risk for developing diabetes. Standardized techniques and equipment will be used during data collection to ensure accuracy and reliability of findings.

Inclusion Criteria

- Nursing students currently enrolled in the Nursing.
- Students who provide informed consent.
- Students available during the time of data collection.

Exclusion Criteria

- Students previously diagnosed with Type 1 diabetes.
- Students who are absent or unwilling to participate.

Data Analysis

Descriptive statistics (frequency, percentage, mean, standard deviation) will be used to summarize demographic data and prevalence. Chi-square test or Fisher's exact test will be used to find associations between diabetes prevalence and variables like age, BMI, family history, and lifestyle factors.

RESULT

Table1: Distribution According to Demographic Variables (N=202)

Demographic Variable		Frequency	Percentage
Age			
	18-19 years	38	18.8%
	19-20 years	140	69.3%
	More than 20 years	25	11.9%
Gender			
	Male	70	34.2%
	Female	133	65.8%
Qualification			
	B.Sc. Nursing 2 nd Year	190	94%
	Post Basic B.sc Nursing 1 st year	13	6%
Living Area			
	University Campus	15	7.5%
	Outside Hostel	20	9.9%
	Home	167	82.6%
Previous Knowledge			
	Yes	167	82.6%
	No	35	17.4%

Table 1 shows that majority of participants (nearly 70%) are between 19 and 20 years, Female students are more as compare to male students, most participants are pursuing a regular B.Sc. Nursing degree, more than half of students live at home with parents and most of the students have prior knowledge about diabetes, possibly due to their nursing education.

Table 2: Mean, SD

S. No	Variable	Mean	SD
1	Body Mass Index	22.73	3.870
2	Waist Circumference	31.81	4.057

Table 2 presents the mean and standard deviation (SD) of two key health indicators among the 202 nursing students. The mean Body Mass Index (BMI) is 22.73, with an SD of 3.870, indicating that most students fall within a healthy weight range. The mean waist circumference is 31.81 inches, with an SD of 4.057.

Table 3: BMI

BMI	Frequency	Percentage
Underweight	17	7.8%
Healthy	143	70.4%
Overweight	43	21.8%

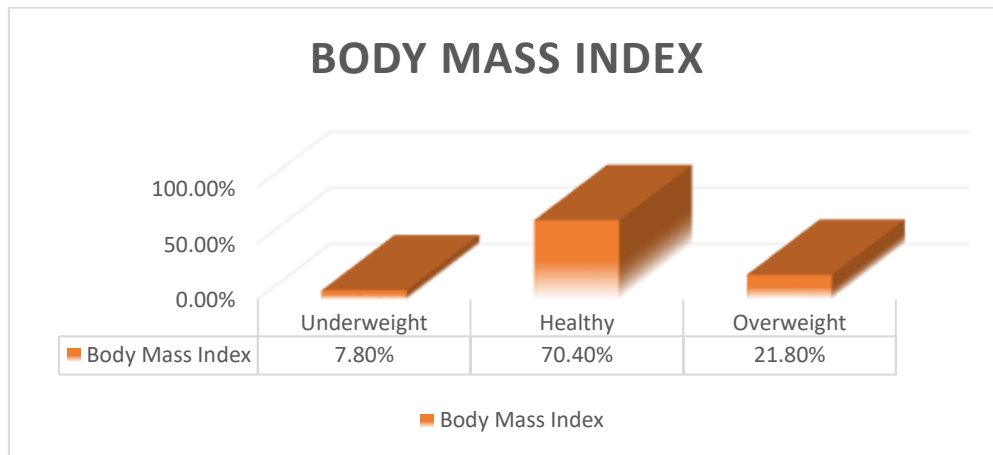


Table 3 presents the Body Mass Index (BMI) distribution among the 202 nursing students. The majority, 143 students (70.4%), fall within the healthy BMI range, indicating a generally well-maintained weight status in the population. However, 43 students (21.8%) are classified as overweight, suggesting a significant portion may be at risk for health issues such as diabetes and cardiovascular conditions. Additionally, 17 students (7.8%) are underweight, which may also pose health risks, including nutritional deficiencies. Overall, while most students are within a healthy range, nearly 30% have BMI levels that could affect their long-term health.

Table 4: Waist Circumference

Waist Circumference	Frequency	Percentage
Normal	91	44.8%
At Risk	72	35.5%
High Risk	39	19.7%

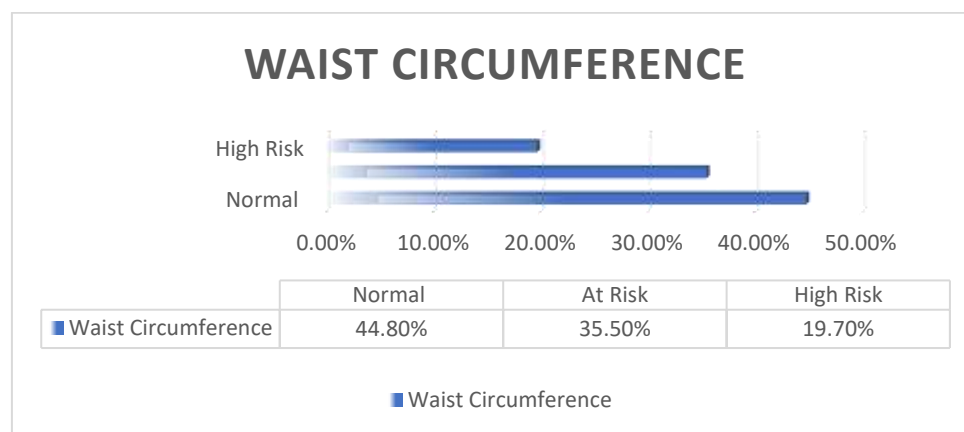


Table 4 shows the distribution of waist circumference among the 202 nursing students, which is an important indicator of abdominal fat and a key risk factor for diabetes and cardiovascular diseases. 91 students (44.8%) fall within the normal range, indicating a lower risk for metabolic complications. However, 72 students (35.5%) are categorized as "At Risk", and 39 students (19.7%) fall into the "High Risk" category. This means that over half of the participants (55.2%) have waist measurements that could increase their risk for developing lifestyle-related health conditions, highlighting the need for preventive health measures and awareness.

Association between BMI and Demographic Variables

Demographic Variable	Underweight	Healthy	Overweight	Chi square	df	P value	Significance
----------------------	-------------	---------	------------	------------	----	---------	--------------

Age							
18-19 years	8	20	10	.469	12	.036	Significant
19-20 years	9	113	18				
More than 20 years	0	10	15				
Gender							
Male	2	38	30	.964	2	.017	Significant
Female	15	105	13				
Qualification							
B.Sc. Nursing 2 nd Year	14	137	39	.594	3	.134	Not Significant
Post Basic B.sc Nursing 1 st year	3	6	4				
Living Area							
University Campus	2	7	6	.764	6	.094	Not Significant
Outside Hostel	3	2	15				
Home	12	133	22				
Previous Knowledge							
Yes	7	120	40	.853	2	.014	Significant
No	10	17	8				

Association between Waist Circumference and Demographic Variables

Demographic Variable	Normal	At Risk	High Risk	Chi square	df	P value	Significance
Age							
18-19 years	20	15	3	.973	12	.029	Significant
19-20 years	67	47	25				
More than 20 years	4	10	11				
Gender							
Male	12	5	20	.237	2	.013	Significant
Female	89	67	19				
Qualification							
B.Sc. Nursing 2 nd Year	84	68	37	.475	3	.179	Not Significant
Post Basic B.sc Nursing 1 st year	7	4	2				
Living Area							
University Campus	1	4	10	.981	6	.065	Not Significant
Outside Hostel	4	2	14				
Home	86	66	15				
Previous Knowledge							
Yes	84	63	20	.764	2	.036	Significant
No	7	9	19				

DISCUSSION

This study employed a descriptive cross-sectional research design to assess the prevalence and risk factors of diabetes mellitus among 202 nursing students at the Faculty of Nursing, SGT University. By capturing

data at a single point in time, the design effectively provides a snapshot of students' health status, particularly concerning Body Mass Index (BMI) and waist circumference, both of which are important indicators of diabetes risk. Data was collected using standardized tools that recorded socio-demographic information, BMI, and waist circumference to identify individuals at risk.

The findings from Table 1 reveal that the majority of participants (69.3%) were aged 19–20 years, with a female majority (65.8%). Most students were enrolled in the B.Sc. Nursing 2nd year program and lived at home, indicating a relatively homogenous population in terms of qualification and living conditions. A high percentage (82.6%) had prior knowledge of diabetes, reflecting the impact of their nursing curriculum.

Table 2 shows the mean BMI (22.73) and waist circumference (31.81 inches), indicating that most students were within normal health parameters. However, Table 3 and 4 show that 21.8% were overweight and 19.7% had high-risk waist measurements, suggesting a notable portion of students are at risk for metabolic conditions.

Statistical associations reveal significant relationships between BMI and age, gender, and diabetes knowledge. Similarly, waist circumference was significantly associated with the same variables. These associations underline the influence of age, gender, and awareness on physical health outcomes.

CONCLUSION

Based on the findings and discussion, this study concludes that while the majority of nursing students at SGT University fall within a healthy range for Body Mass Index (BMI) and waist circumference, a considerable proportion exhibit risk factors associated with diabetes mellitus. Specifically, 21.8% of students were overweight, and 55.2% had waist measurements in the at-risk or high-risk categories. Statistically significant associations were found between BMI and demographic variables such as age, gender, and prior knowledge of diabetes. Similarly, waist circumference was significantly linked to age, gender, and awareness levels. These results suggest that even among health-aware populations like nursing students, lifestyle-related risks remain prevalent. The study highlights the importance of ongoing health education, lifestyle modification, and routine screening within this group. Promoting healthy habits early in health professionals' careers is essential not only for their well-being but also for setting an example for the communities they will eventually serve.

REFERENCES

1. American Diabetes Association. (2023). *Diabetes Overview*. <https://www.diabetes.org/diabetes>
2. Centers for Disease Control and Prevention (CDC). (2022). *Type 1 and Type 2 Diabetes*.
3. International Diabetes Federation. (2023). *IDF Diabetes Atlas*. 10th edition.
4. World Health Organization. (2023). *Global report on diabetes*.
5. Narayan, K. M. V. et al. (2017). "Type 2 Diabetes in Youth: A Growing Problem." *Diabetes Care*, 40(9), 1043-1045.
6. Hu, F. B. (2011). "Globalization of Diabetes." *Diabetes Care*, 34(6), 1249-1257.
7. Chen, L. et al. (2011). "Screening for type 2 diabetes: the importance of considering prediabetes." *Diabetes Care*, 34(Suppl 2), S139-S144.
8. Riegel, B., et al. (2020). "Nursing students as a distinct population in healthcare." *Nursing Outlook*, 68(1), 10-12.
9. Aljohani, A. S. (2019). "Diabetes knowledge among nursing students." *Journal of Nursing Education and Practice*, 9(4), 43-49.
10. Karaca, A. & Yildirim, N. (2021). "Effects of academic stress and sleep disturbances in nursing students." *Nurse Education Today*, 104, 104964.
11. Alshahrani, M. et al. (2022). "Early screening importance in youth diabetes." *International Journal of Environmental Research and Public Health*, 19(1), 231.
12. American Heart Association. (2022). *Complications of Diabetes*.
13. Baig, M. et al. (2020). "Health of healthcare workers with chronic diseases." *Frontiers in Public Health*, 8, 564.
14. Alamri, F. A. et al. (2018). "Prevalence of diabetes among university students in Saudi Arabia." *Diabetes & Metabolic Syndrome*, 12(4), 485-490.
15. Shrivastava, S. R. et al. (2013). "Knowledge and awareness about diabetes in college students." *Annals of Medical and Health Sciences Research*, 3(1), 51-54.
16. Saeedi, P. et al. (2020). "Diabetes in young adults: urgent action needed." *The Lancet Diabetes & Endocrinology*, 8(5), 357-359.
17. World Health Organization. (2023). *Noncommunicable Diseases Progress Monitor*.
18. Mayer-Davis, E. J. et al. (2017). "Diabetes in Youth in the U.S." *New England Journal of Medicine*, 376(15), 1419-1429.
19. Jou, Y. et al. (2021). "Lifestyle risk factors in nursing students." *Nursing Open*, 8(2), 779-787.

20. Zimmet, P. et al. (2020). "Diabetes prevention: a global imperative." *The Lancet Diabetes & Endocrinology*, 8(10), 842–844.
21. Ganasegeran, K. et al. (2015). "Prevalence of diabetes risk among Malaysian university students." *BMC Public Health*, 15, 1224.
22. Aljohani, A. et al. (2022). "Student health and future medical performance." *Nurse Education Today*, 109, 105256.
23. Bandura, A. (2004). "Health promotion through role modeling." *Health Education & Behavior*, 31(2), 143–164.
24. Asif, M. (2022). "Health promotion strategies in nursing education." *International Journal of Nursing Studies*, 124, 104099.