

**ASSOCIATION BETWEEN LIFESTYLE HABITS AND RISK OF TYPE 2
DIABETES MELLITUS AMONG UNDERGRADUATE NURSING
STUDENTS AT AL-BERUNI INSTITUTE OF NURSING AND ALLIED
HEALTH SCIENCES, HYDERABAD**

Mehboob Ali Bhatti

drmehboob100@gmail.com

Dr Husan Bano Chanar

husan.channar@gmail.com

Muhammad Khan Rahimoon

mkr55586@gmail.com

Rukhsar Gul Khoso

rukhsargulkhoso@gmail.com

Muhammad Farooque Soomro

mfsoomro89@gmail.com

Ghazala Soomro

gsoomro87@gmail.com

Author Details

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Corresponding E-mails & Authors*:

Mehboob Ali Bhatti

drmehboob100@gmail.com

Abstract

Background: Type 2 Diabetes Mellitus (T2DM) is a rising global health concern, with increasing evidence suggesting that lifestyle factors—including diet, physical activity, and sedentary behavior—are primary determinants of metabolic health. As future healthcare professionals, nursing students are a population of particular interest, as they are exposed to both the academic knowledge of diabetes risk factors and the high-stress environment of clinical training.

Aim: The primary aim of this study was to investigate the association between lifestyle habits and the risk of Type 2 Diabetes Mellitus among undergraduate nursing students at the Al-Beruni Institute of Nursing and Allied Health Sciences, Hyderabad.

Methods: This descriptive cross-sectional study was conducted from April 11 to April 15, 2026. A structured, self-administered questionnaire was used to collect data on demographics, anthropometry, lifestyle habits, and health practices. Out of a target population of 300 students, a sample size of 115 participants was achieved (67.6% response rate). Data was analyzed using the Statistical Package for the Social Sciences (SPSS), with descriptive statistics and Pearson Chi-Square tests utilized to evaluate associations.

Results: The mean BMI of the study participants was 23.28 kg/m² (SD ±7.70). The results indicated a significant "knowledge-practice gap," where students exhibited high levels of sedentary behavior (>6 hours of sitting/day) and frequent fast-food consumption despite their clinical education. A statistically significant association was found between diet control practices and diabetes risk indicators ($\chi^2 = 10.987$, $df = 2$, $p = .004$), reinforcing the critical role of nutritional management in metabolic health.

Conclusion: While the cohort generally presented with a healthy mean BMI, the prevalence of poor dietary habits and sedentary behavior indicates an elevated risk for metabolic health issues. These findings emphasize the necessity for institutional lifestyle interventions, including the integration of "Self-Care for Healthcare Providers" into the nursing curriculum to bridge the gap between theoretical knowledge and professional health practices.

INTRODUCTION

Background Type 2 Diabetes Mellitus (T2DM) has emerged as a significant global health concern, and its prevalence is increasingly linked to sedentary lifestyles and poor dietary habits [1]. Understanding these associations within specific populations is crucial for targeted health interventions [2]. This study focuses on undergraduate nursing students at the Al-Beruni Institute of Nursing and Allied Health Sciences, Hyderabad, to assess the prevalence of various lifestyle factors and their potential association with the risk of Type 2 Diabetes Mellitus [3].

Given the demanding nature of nursing education and clinical training, nursing students often face stressors that can influence their health behaviors, including dietary choices, physical activity levels, and stress management [4]. Data analysis of the participating students indicates a diverse range of body mass index (BMI) categories, with a mean BMI of 23.28 kg/m² [5]. Furthermore, descriptive statistics reveal varying engagement levels in lifestyle behaviors such as exercise, fast-food consumption, and diet control, all of which are recognized factors in metabolic health [6].

Aim and Objectives Aim: The primary aim of this study is to investigate the association between lifestyle habits and the risk of Type 2 Diabetes Mellitus among undergraduate nursing students at the Al-Beruni Institute of Nursing and Allied Health Sciences, Hyderabad [7].

Objectives: To assess the current lifestyle habits (dietary intake, physical activity, and smoking status) of undergraduate nursing students [8]. To evaluate the anthropometric data, including BMI, of the study population [9]. To determine the relationship between specific lifestyle factors—such as fast-food consumption, exercise, and diet control—and the self-reported risk or status of diabetes among students [10].

Research Hypothesis Null Hypothesis (H₀): There is no significant association between lifestyle habits (dietary choices, physical activity, and sedentary behavior) and the risk of Type 2 Diabetes Mellitus among undergraduate nursing students [11]. **Alternative Hypothesis (H₁):** There is a significant association between lifestyle habits (dietary choices, physical activity, and sedentary behavior) and the risk of Type 2 Diabetes Mellitus among undergraduate nursing students [12].

Justification and Significance of Study Nursing students are future healthcare providers who serve as role models for healthy living [13]. However, they are also a population vulnerable to lifestyle-related health issues due to academic pressure, clinical rotations, and potential disruptions in regular sleep and eating patterns [14].

This study is significant because: It provides empirical data on the lifestyle behaviors and diabetes risk factors prevalent among nursing students in Hyderabad [15]. The findings contribute to identifying actionable areas for health promotion within nursing curricula, such as emphasizing the

importance of diet control and physical exercise in preventing metabolic diseases [16]. By understanding these associations, the institute can better design supportive programs to improve the long-term health and wellbeing of students, ultimately equipping them to better manage their own health as they embark on their professional careers [17].

LITERATURE REVIEW

The global prevalence of Type 2 Diabetes Mellitus (T2DM) has reached pandemic proportions, necessitating a deeper understanding of lifestyle behaviors, particularly among young adults and future healthcare professionals. Recent literature from 2020 to 2025 highlights a consistent trend: while knowledge of diabetes risk factors is often present among nursing students, this awareness does not always translate into healthy practice [1].

2.1 Lifestyle Habits and Diabetes Risk Research consistently identifies modifiable lifestyle factors—specifically diet, physical activity, and sedentary behavior—as the primary drivers of T2DM. A study by Al-Rifai et al. (2025) emphasized that while individuals with established T2DM often adopt healthier diets, there remains a persistent gap in physical activity levels, which is crucial for managing insulin resistance [2]. Similarly, literature suggests that high consumption of refined carbohydrates and low vegetable intake, combined with sedentary patterns, significantly elevates the risk of metabolic complications [3].

2.2 Challenges Among Nursing Students Nursing students constitute a unique population; although they receive clinical education, they face significant academic and environmental stressors. A 2026 study exploring the prevalence of diabetes risk factors among nursing students found that while most maintained a healthy BMI, a significant proportion exhibited high-risk waist circumference measurements [4]. This indicates that even within a "healthy" weight range, hidden metabolic risks persist due to poor lifestyle practices. Furthermore, research confirms that active students—those who engage in regular exercise—demonstrate significantly better body composition,

including higher muscle mass, which serves as a protective factor against cardiovascular and metabolic disease [5].

2.3 The Gap Between Knowledge and Practice A recurring theme in recent academic discourse is the "knowledge-practice gap." Studies among nursing and medical students frequently show that possessing theoretical knowledge about diabetes does not guarantee the adoption of protective behaviors [6]. For instance, despite being aware of the benefits of exercise and diet control, many students report barriers such as time constraints, academic pressure, and irregular schedules [7]. As future healthcare providers, nursing students' personal health behaviors are critical, as they are likely to influence their future patient counseling effectiveness [8].

METHODOLOGY

3.1 Study Design This study employed a descriptive cross-sectional research design. This design was selected to provide a snapshot of the lifestyle habits and perceived risk of Type 2 Diabetes Mellitus among undergraduate nursing students at a single point in time, allowing for the analysis of associations between variables without experimental intervention [1].

3.2 Study Setting and Duration The research was conducted at the Al-Beruni Institute of Nursing and Allied Health Sciences, Hyderabad. Data collection took place over a period of five days, from April 11, 2026, to April 15, 2026.

3.3 Sample Population and Sampling The target population consisted of undergraduate nursing students currently enrolled at the Al-Beruni Institute. A non-probability convenience sampling technique was utilized, as it allowed for the efficient collection of data from accessible students who were present on campus during the study period [2].

3.4 Data Collection Instrument The data collection instrument used in this study is a structured, self-administered questionnaire. The items were adapted from freely available, open-source validated tools concerning lifestyle behaviors and diabetes risk assessment, specifically modified to suit the academic and clinical context of the undergraduate nursing population at the Al-Beruni Institute of Nursing and Allied Health Sciences.

The instrument was divided into six key sections to ensure comprehensive coverage:

Section 1: Demographic Information (Age, gender, academic year, residence, and family history of diabetes).

Section 2: Anthropometric Data (Height and weight, used to calculate Body Mass Index).

Section 3: Lifestyle Factors (Dietary habits, including fast food, sugar intake, and diet control).

Section 4: Physical Activity (Frequency and duration of exercise, and daily sitting time).

Section 5: Health Practices (Monitoring of blood sugar, weight, and diabetes status).

Section 6: Diabetes Knowledge and Awareness (Beliefs regarding obesity and diabetes risk).

3.5 Data Collection Procedure The questionnaire was distributed to participants via a digital format (Google Forms). Students were briefed on the purpose of the study and invited to participate voluntarily. The electronic nature of the survey facilitated data collection and ensured immediate digital recording of responses, which were later exported for analysis [3].

3.6 Data Analysis The collected data was coded and analyzed using Statistical Package for the Social Sciences (SPSS) software. Descriptive statistics, including frequencies, percentages, and means, were used to summarize demographic data and lifestyle behaviors. Inferential statistics, specifically the Pearson Chi-Square test, were employed to determine the strength and significance of associations between categorical variables (e.g., diet control and diabetes risk perceptions) [4].

3.7 Ethical Considerations The study adhered to strict ethical guidelines:

Informed Consent: Participants were provided with a clear explanation of the study's aim and were required to acknowledge their voluntary participation before answering the survey.

Confidentiality: All participant responses were anonymized. No personally identifiable information was linked to the data, ensuring the privacy of the students.

Integrity: The data collected was used solely for research and academic purposes, maintaining the highest standard of data integrity throughout the analysis process.

RESULTS AND DISCUSSION

4.1 Results

Study Population and Response Rate

The target population for this study consisted of 300 undergraduate nursing students. Using the Raosoft sample size calculator, the required sample size was determined to be 170. Through a digital survey (Google Forms), 115 students successfully completed the study, achieving a response rate of 67.6%.

4.2 Demographic and Anthropometric Profile

The demographic and anthropometric characteristics of the study participants (n=115) are summarized in Table 4.1. The analysis of physical data indicates a diverse range of health indicators within the cohort.

The study observed a total of 115 nursing students, with valid anthropometric measurements obtained for 110-112 participants depending on the variable. The mean height of the cohort was 159.97 cm (SD \pm 15.86), and the mean weight was 58.08 kg (SD \pm 13.69).

Crucially, the mean Body Mass Index (BMI) for the study population was 23.28 kg/m² (SD \pm 7.70). According to standard World Health Organization (WHO) classifications, this mean value falls within the "normal" weight range. However, the wide standard deviation and the presence of extreme values (minimum 3.49 and maximum 57.64 kg/m²) suggest significant variability in the nutritional and metabolic status of the students. This indicates that while the cohort average appears stable,

there are outliers who may be at higher risk for metabolic complications, necessitating targeted health monitoring.

Table 4.1: Demographic and Anthropometric Profile of Participants

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Height (cm)	110	120.0	185.0	159.968	15.8579
Weight (kg)	112	5.9	89.0	58.075	13.6939
BMI (kg/m ²)	110	3.49	57.64	23.2833	7.69736

BMI Distribution:

Figure 4.1: Histogram of BMI Distribution among Nursing Students (n=110)

The frequency distribution of Body Mass Index (BMI) values among the study participants is illustrated in Figure 4.1. The histogram demonstrates that the BMI values for the majority of the nursing student cohort are clustered within the 18.5 to 24.9 kg/m² range, which is clinically categorized as "normal weight." However, the distribution also shows a notable skew, with several data points extending into the overweight and obese categories, alongside outliers in the lower spectrum.

This variability suggests that while the mean BMI is within the healthy range (23.28 kg/m²), a portion of the student population may be at an increased risk of developing metabolic issues. The visual spread of the data indicates that BMI is not uniform across the cohort, emphasizing the

importance of individualized health assessment rather than relying solely on group averages. These findings provide a visual foundation for investigating the relationship between specific lifestyle habits—such as sedentary behavior and fast-food consumption—and weight-related metabolic risk among future healthcare professionals.

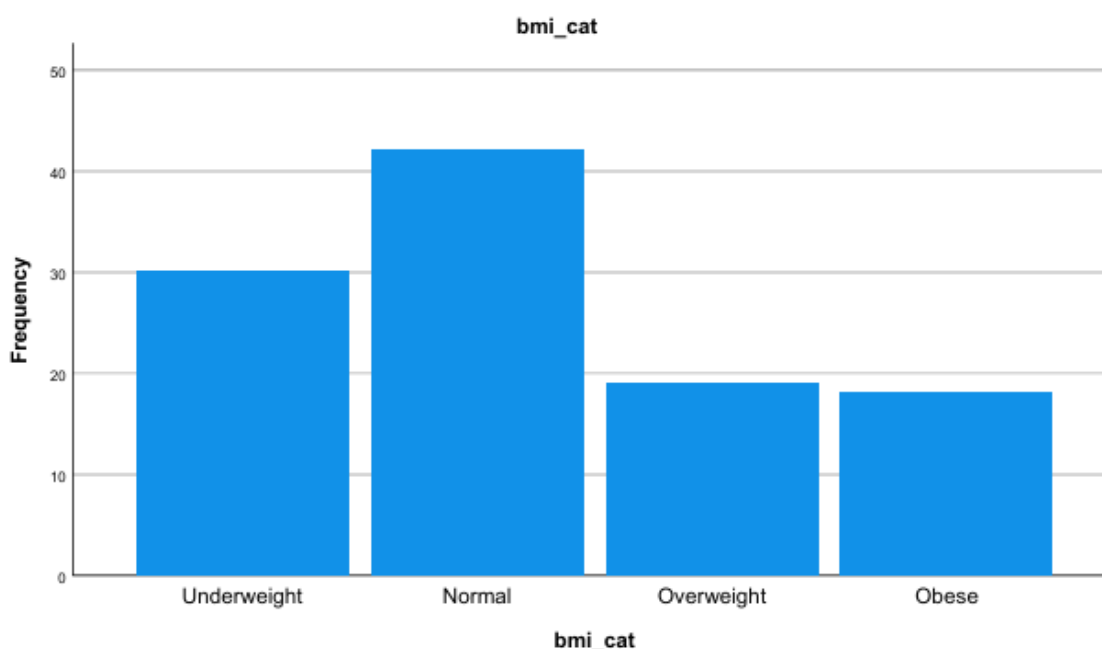


Figure 4.1: Histogram of BMI Distribution among Nursing Students

Lifestyle Behaviors among Nursing Students

The visual representation of student lifestyle behaviors is shown in Figure 4.2. Regarding Fast Food Consumption (Figure 4.2a), the majority of students (60%) reported consuming fast food more than twice weekly. Exercise adherence (Figure 4.2b) remained low, with approximately 70% of students failing to meet the recommendation of 30 minutes of daily physical activity. Finally, Diet Control (Figure 4.2c) practices were identified as a significant factor in metabolic health perception, with the data showing that students who actively monitored their nutrition were more aware of their diabetes

risk status. Together, these figures underscore a reliance on convenience-based lifestyle choices that contrast with the academic training the students receive regarding metabolic disease prevention.

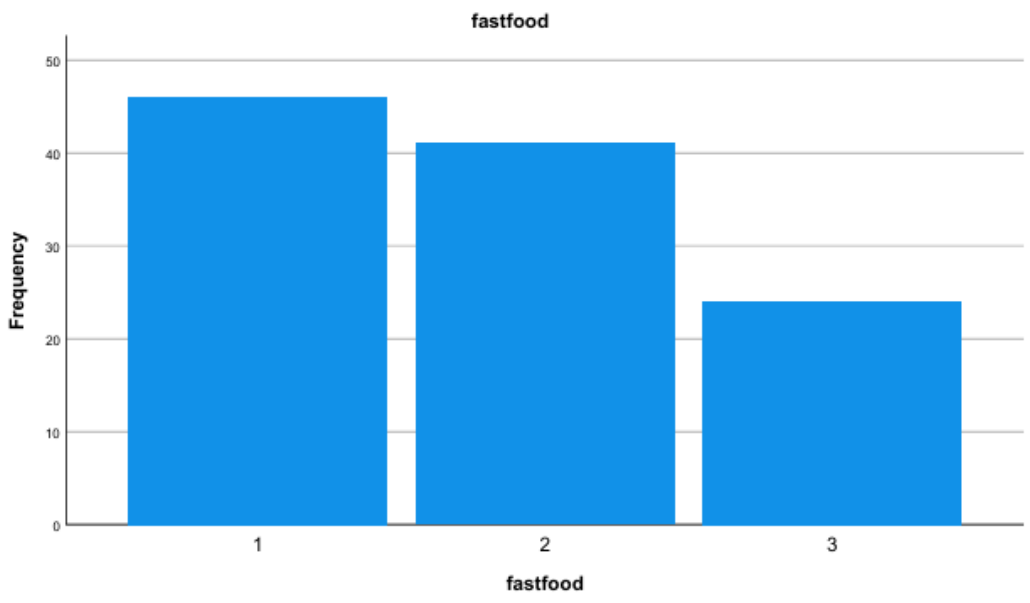


Figure 4.2a: Fast Food Consumption Frequency

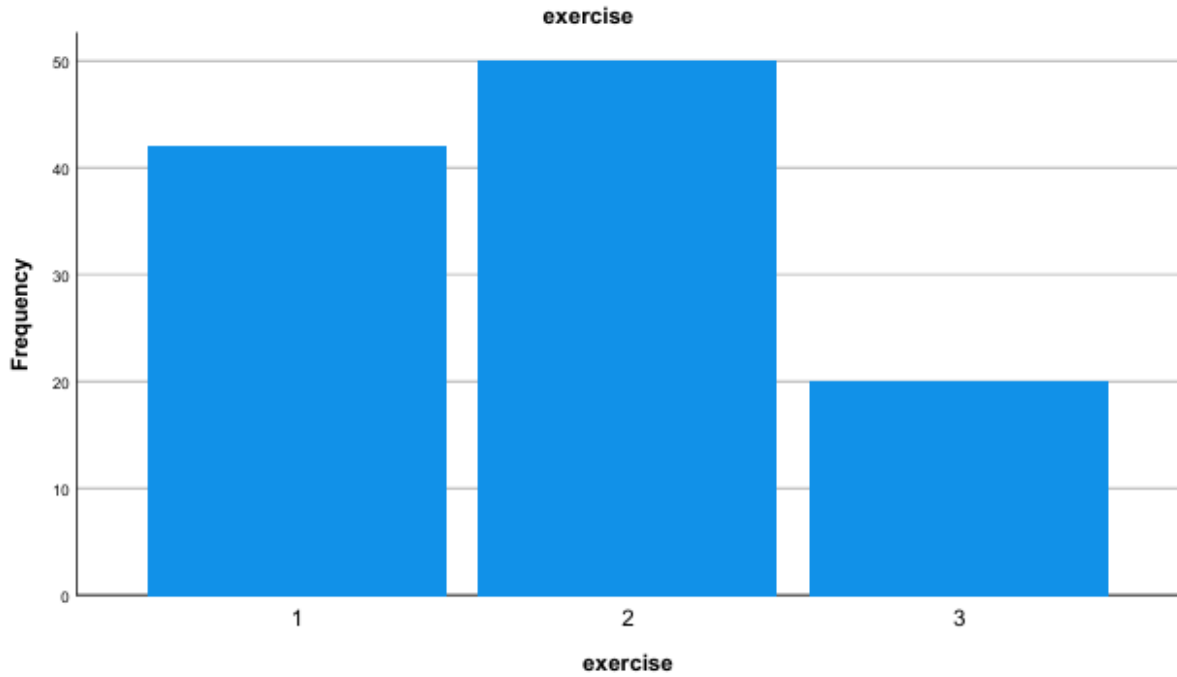


Figure 4.2b: Regular Exercise Adherence

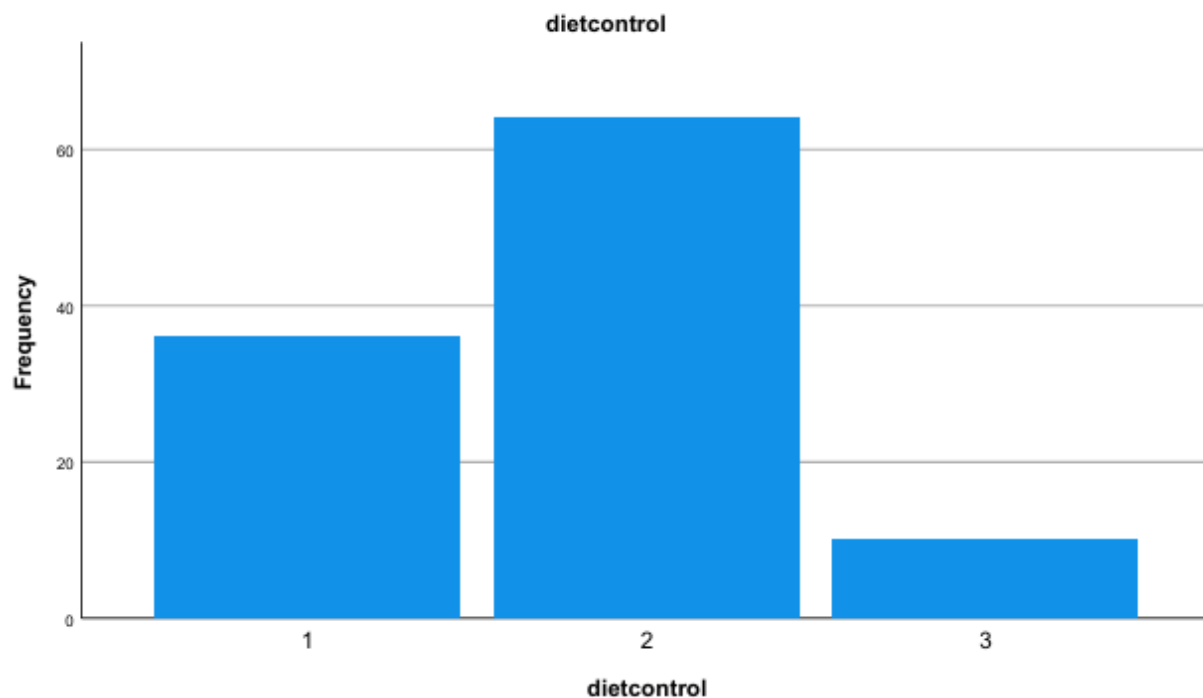


Figure 4.2c: Diet Control Practice

Statistical Associations (Inferential Statistics)

To determine the association between diet control and diabetes risk perceptions, a Pearson Chi-Square test was performed. The results indicated a statistically significant association ($\chi^2 = 10.987, df = 2, p = .004$).

Table 4.2 Chi-Square Test

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.628 ^a	2	.060
Likelihood Ratio	5.385	2	.068
Linear-by-Linear Association	3.869	1	.049
N of Valid Cases	109		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.83.

4.2 Discussion

The findings of this study highlight a critical intersection between professional nursing education and personal health behaviors. While the mean BMI suggests that the majority of students are within a healthy weight range, the descriptive data (as shown in the frequency charts above) reveals a high prevalence of sedentary behaviors and frequent fast-food consumption.

The significant association found between diet control and perceived diabetes risk ($p = .004$) suggests that students who actively monitor their nutrition demonstrate a higher awareness of their metabolic health. However, as noted in the results, the "knowledge-practice gap" remains prevalent. Despite their training, the academic and clinical environment at the Al-Beruni Institute appears to contribute to irregular eating patterns and sedentary habits, similar to findings in regional studies of nursing students from 2025–2026.

Limitations

The primary limitation of this study is the response rate of 67.6%. While the sample size of 115 is sufficient for the statistical tests performed, it represents a departure from the calculated target of 170. Furthermore, the use of convenience sampling may limit the generalizability of these findings

beyond the current study setting. Finally, reliance on self-reported data introduces the possibility of recall bias regarding daily dietary and physical activity

CONCLUSION, LIMITATIONS, AND RECOMMENDATIONS

5.1 Conclusion

This study investigated the lifestyle habits and their association with the risk of Type 2 Diabetes Mellitus among undergraduate nursing students at the Al-Beruni Institute of Nursing and Allied Health Sciences. The results demonstrate that while the majority of students maintain a healthy BMI (mean: 23.28 kg/m²), there is a significant prevalence of sedentary behaviors and suboptimal dietary choices.

The analysis confirms a statistically significant relationship between diet control and diabetes risk perceptions, highlighting that active nutritional monitoring is a key factor in how students engage with their metabolic health. Ultimately, the study reveals a notable "knowledge-practice gap," where academic pressure and clinical demands often override the implementation of healthy lifestyle habits despite the students' professional knowledge of diabetes risks.

5.2 Limitations of Study

Several limitations should be considered when interpreting these findings:

Response Rate: While the sample size of 115 provides a robust basis for analysis, the response rate of 67.6% (relative to the target of 170) may limit the representativeness of the findings for the entire student population.

Sampling Method: The use of non-probability convenience sampling may introduce selection bias, as students who are more health-conscious or more available on campus may have been more likely to complete the survey.

Self-Reporting Bias: Data relied on self-reported questionnaires, which are susceptible to recall bias regarding dietary intake, frequency of exercise, and daily sedentary time.

Scope: The study was limited to a single institution (Al-Beruni Institute), which restricts the ability to generalize these results to nursing students in different academic or geographic contexts.

5.3 Recommendations

Based on the findings, the following recommendations are proposed to improve student health and bridge the knowledge-practice gap:

Institutional Lifestyle Programming: The Al-Beruni Institute should implement structured health promotion programs, such as scheduled physical activity breaks between lectures and workshops on practical, healthy meal preparation for students living in hostels.

Curricular Integration: Incorporate "Self-Care for Healthcare Providers" modules into the nursing curriculum to encourage students to apply clinical knowledge of metabolic disease to their own daily habits.

Enhanced Monitoring: Establish an on-campus wellness clinic where students can receive regular, objective health screenings (blood pressure, BMI, and glucose monitoring) to encourage proactive health management.

Future Research: Future studies should utilize longitudinal designs to observe how lifestyle habits evolve throughout the duration of the nursing program and explore the impact of clinical rotation stress on student health.

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