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Assessment of Nutritional Status among Undergraduate Nursing Students : Residing In Public Sectors Hostels of Peshawar, KPK

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Abstract

Background and Purpose: Nutritional status is a crucial health indicator that impacts physical health, cognitive function, and academic performance. University students, especially those living in hostels, often face poor dietary habits due to financial constraints, irregular schedules, and limited access to healthy food. These issues can lead to malnutrition and diminished academic effectiveness. This study aimed to evaluate the nutritional status of undergraduate nursing students residing at public sector hostels in Peshawar and to identify the factors influencing their dietary patterns and nutritional health. Objective: The study aimed to assess the nutritional status of nursing students through anthropometric and dietary evaluations and to explore the relationship between demographic, lifestyle, and nutritional knowledge factors and their eating habits. Methods: A descriptive cross-sectional study was conducted from July to December 2025 with 179 undergraduate nursing students living in three public sector hostels in Peshawar—Lady Reading Hospital, Khyber Teaching Hospital, and Hayatabad Medical Complex. Data were collected using a validated questionnaire based on the Mini Nutritional Assessment (MNA) tool, which included demographic information, anthropometric measurements, and dietary behaviors. Data analysis was performed using SPSS software. Results: Of the 179 participants, 68.16% had a normal BMI, while 25.14% were underweight, 6.15% were overweight, and 0.58% were classified as obese. Most students (69.8%) consumed three meals a day, yet 48% seldom ate fruits and 33% rarely consumed dairy. Although nutrition knowledge was high (76%), a significant gap existed between knowledge and practice. Variations in meal consumption and nutritional awareness were noted across different academic years, living arrangements, and lengths of hostel stay ($p < 0.05$). Conclusion: The findings indicate that while many nursing students have strong nutritional knowledge, their eating habits are inconsistent, particularly regarding fruit and dairy intake. Longer stays in hostels and being in earlier academic years were linked to better nutritional attitudes and practices. These results underscore the necessity for focused nutritional interventions to promote sustained healthy eating behaviors among nursing students.

1. Introduction

Dietary intake is especially important for university students' general health, intellectual abilities, and academic performance. It is necessary for physical development, energy levels and cognitive functions-all of which are vital for productive learning. Early adulthood brings about significant life style changes that can result in irregular eating patterns, meal skipping, and a tendency to choose quick, high calorie, nutrient-poor foods. For these reasons, university students worldwide are often considered to be at risk for nutritional problems. Such a bad eating habits can impair immune function, lower energy levels and hinder cognitive function, all of which eventually impact academic performance [1].

Malnutrition presents a double burden in developing countries such as Pakistan, combining the growing burden of obesity and excess weight. Fast-paced city development, dietary changes, and financial strain are some of the factors that have led to unhealthy eating habits, such as consumption of fast food, fats, and carbohydrates [1]. Early adulthood is a critical time for adequate nutrition because it establishes the basis for long term dietary habits and health outcomes [2]. However, financial resources, academic stress and a lack of sufficient food are the factors that many students are struggling with. These factors also impact the student's ability to
eat a healthy diet. [3, 4].

The increasing costs of nutritious food and the expanding access to affordable fast food further complicate these issues, resulting in nutrient poor diet, fatigue, reduced academic achievement, and a higher risk of diet-related health problems [5]. Nutritional status which reflects the health of an individual reflecting as impacted by nutrient intake, absorption, and utilization is generally assessed through dietary assessment, anthropometric measurements, and biochemical indicators. Irregular meal pattern, stress, inadequate physical activity, and sleep are common reason for inadequate nutritional status among students. As a result, there can be a set of problems such as obesity, digestive disorders, hormonal imbalances, micronutrient deficiencies, and particularly iron-deficiency anemia [6]. Establishing sustainable dietary habits is crucial for young adults between the ages of 17 and 25. Pressure from colleagues, cultural norms, and the absence of nutritional awareness frequently change their eating choices [2]. Those students residing in hostels specially suffered as a result of inconsistent meal schedules, poor cafeteria food choices, and limited access to fresh foods [3, 4]. These behavioral and environmental factors increase the likelihood of nutritional imbalances and other health-related problems since they are linked to academic and emotional stress [5].

Students' eating habits and general health are significantly impacted by living in the hostels because it is their first time being away from home without parental supervision or set meal schedules. Unhealthy habits like smoking, eating too much fast food, and skipping meals may be encouraged by these settings, all of which may lead to long-term health problems like diabetes and obesity over time. Hormonal fluctuations, stress, and fewer opportunities for physical activity may make female students living in dorms more vulnerable to weight gain [7]. In these environments, malnutrition brought on by an excess or deficiency of vital nutrients has grown to be a significant issue, which is exacerbated by financial difficulties and a lack of knowledge about appropriate eating habits [2].

Among university students, nursing students affirm specific attention for nutritional assessment as future healthcare professionals. Their training is intense and demanding, it often leads to a negative eating patterns and irregular frequency of meal, including low fruit and vegetable intake, high intake of fast-food, and skipping of breakfast. Insufficient knowledge about nutrition, combined with academic pressures and financial limitations, further exacerbates these unhealthy habits, reducing immunity, causing fatigue, and impairing concentration, thus affecting both academic and professional performance [8, 9]. Peer pressure, concerns about body image, and media influences may further contribute to disordered eating patterns, specifically among young women [10]. Although nutrition is a crucial concern for nursing students, research focusing on students in public sector hostels of Peshawar is limited. Most of the studies either has overlook this group understudy or have focused on students from other discipline or from other geographic areas, resulting in a deficiency of local evidence regarding the eating behaviors, nutritional problems, and lifestyle trends of undergraduate nursing students at Peshawar. Since dietary choices can be contextual, depending on variables such as food accessibility, socioeconomic status, and cultural influences. Hence, localized studies are essential to accurately assess the nutritional needs of this group [11].

Understanding the nutritional health of nursing students is not only for their personal health but also for their effectiveness in the field of as healthcare practices. Poor nutrition may diminish their capability to deliver quality care appropriately and also to act as role models of health [8]. Therefore, for professional standards and public health, evaluating and improving the nutritional status of nursing students has wider ramifications. The research gap will be filled by this study, which will also assist educational institutions and policymakers in developing strategies and interventions targeted at enhancing the academic performance, general health, and

knowledge about the nutrition of nursing students residing in Peshawar dorms.

1.1 Purpose of the Study

In addition to evaluating the nutritional status of undergraduate nursing students residing in Peshawar's public dormitories, this study sought to identify the variables influencing their eating patterns and overall health. The objective was to provide evidence-based data to healthcare and educational policymakers so they could create policies that would enhance nursing students' academic performance, general health, and nutrition. This group's wellbeing would be safeguarded, their professional readiness would be enhanced, and they would be more equipped to advocate for healthy lifestyles within healthcare systems by addressing issues related to nutrition.

1.2 Significance of the Study

This study is significant because there is no literature available that focuses on the nursing students' nutritional condition living in Peshawar's public hostel, aiming to evaluate the nutritional status of this group. The hostel life can lead to poor eating habits due to limited financial resources, infrequent meal patterns, and a lack of nutritional knowledge. Since, the future of healthcare depends on nursing students, proper nutrition will directly impacts their health, intellectual performance, and clinical efficiency. The findings of this study's will provide a basis for the development of effective interventions and evidence-based policies to enhance their nutritional health.

1.3 Objectives of the Study

- To assess the nutritional status of undergraduate nursing students living in public sector hostels of Peshawar.

1.3 Research Question

- What is the nutritional status of undergraduate nursing students residing in public sector hostels of Peshawar, and what lifestyle and dietary factors contribute to it?

1.5 Operational Definitions

- **Nutritional Status**

The health condition of nursing students determined using Body Mass Index (BMI), dietary intake, lifestyle factors, and also the validated Mini Nutritional Assessment (MNA) questionnaire to assess nutrient balance and overall nutritional needs.

- **Undergraduate Nursing Students**

Students enrolled in a Bachelor of Science in Nursing (BSN) program aged 18-25 years who were studying at public nursing colleges at Peshawar.

- **Public Sector Hostels**

Hostels managed by the government in association with Lady Reading Hospital (LRH), Khyber Teaching Hospital (KTH), and Hayatabad Medical Complex (HMC), where the participants reside.

1.4 Summary

The chronological review of literature from 2025 back to 2016 reveals a consistent and concerning trend regarding the nutritional health of university students in South Asia, which has been and continues to be severely compromised. Research has progressed from identifying particular deficiencies and health problems to creating a thorough understanding of a complex syndrome marked by multiple environmental, economic, and psychological factors, as well as a triple burden of malnutrition and a persistent gap between knowledge and practice. Poor food quality, improper eating habits, psychological disorders, and health problems like gastrointestinal illnesses and anemia are all frequently linked to the hostel setting. Some persistent challenges of these environments are financial constraints, a lack of knowledge about nutrition, and the accessibility and temptation of fast food. The problem is not limited to any particular group but also affects students in a variety of sectors, including those in rural and urban areas of different countries, as well as those in the medical and paramedical industries, who would be expected to have greater expertise.

Focused, multifaceted treatments are desperately needed is one of the conclusions pointed out by the information gathered over the last ten years. These initiatives should go beyond basic nutritional education to address systemic problems like raising the standard and demand for dorm meals, fostering a healthy eating environment on campus, encouraging mental wellness in addition to physical health, and creating regulations that make healthy choices simple and affordable for students. A thorough and prompt solution to this well-documented situation is essential for the health of the current generation of university students, who will make up the region's future workforce.

2. Literature Review

2.1 Introduction

This chapter examines the research on the nutritional condition and contributing factors of undergraduate nursing students residing in Peshawar's public hostels. Using a descriptive review approach, the chapter summarizes and evaluates current empirical and theoretical research from a local, national, and worldwide perspective. It seeks to increase awareness of this crucial health indicator among the targeted student population, which will aid in

identifying factors such as eating patterns, food security, academic pressure, and living situations that may impact their nutritional status. In order to focus on the Peshawar situation in greater detail, the chapter starts with a summary of university students around the world who are dealing with general nutritional difficulties.

2.2 Review Method

In a literature review, earlier research on the subject is analyzed and paraphrased. This includes past studies, writings, and publications on the topic in a variety of contexts. It also draws attention to how serious the problems are and how many gaps need to be filled by intervention.

2.3 Objectives of Literature Review

The main objectives of the literature review are:

1. To review global and regional literature related to the current nutritional status and eating habits of undergraduate students, specifically among those living in hostel accommodations.
2. To examine factors related to the nutritional status of nursing students and other university students living in hostels, paying special attention to dietary patterns, student-accommodation meal environment, socio-economic factors, and lifestyle factors.
3. To provide updated information about how poor nutritional status affects students' physical health and well-being, as well as their academic performance.
4. To identify gaps in the existing literature with regard to assessing the nutritional status of undergraduate nursing students living in public sector hostels of Peshawar, Khyber Pakhtunkhwa, Pakistan.

2.4 Search Strategy

The key terms used in the systematic search were nutritional status, dietary habits, food consumption, undergraduate students, nursing students, university hostels, public sector hostels, Peshawar, Pakistan, meal skipping, fast food consumption, BMI, anemia, micronutrient deficiency, and factors affecting nutritional status. Searches were conducted using the most recent search engine, Google Scholar, with the use of a BOOLEAN strategy by combining keywords with operators such as AND, OR, and NOT to narrow the search. Literature was included or excluded based on inclusion and exclusion criteria. More emphasis was placed on very recent studies, starting from 2016 to 2025, to ensure recent data that is representative of the prevailing context.

2.5 Introduction

The transition into university life tends to be an important milestone and is often synonymous with greater independence, serious changing in lifestyle,

and higher levels of personal responsibility among young adults. Living in a dorm makes this adjustment much more difficult for many students in South Asia, as it separates them from the comparatively controlled eating environment found in most homes. Unhealthy eating behaviors, including as skipping meals, consuming more processed and fast food, and consuming fewer fruits and vegetables, are frequently associated with this stage. A growing corpus of research over the past ten years has documented detrimental shifts in these eating habits that are linked to university students' declining emotional and physical well-being as well as their academic performance. In order to trace the development of our knowledge regarding the nutritional status and eating habits of university students in South Asia, with an emphasis on India, Pakistan, Bangladesh, Sri Lanka, and Afghanistan, this literature review compiles research from 2016 to 2025. The current review highlights the ongoing calls for focused interventions by the scientific community over the past ten years, highlights the complex and chronic nature of this public health issue, and identifies important contributing factors based on an analysis of evidence from recent findings to those of previous studies. From early observations showing clear deficiencies to a thorough analysis of a complex —triple burden‖ of malnutrition affecting this population, the evidence points to a concerning trend.

2.6 The Contemporary Landscape: Recent Studies (2023-2025)

In addition to going beyond observation to examine the intricate connections between knowledge, environment, and health outcomes, recent studies present a clear, comprehensive picture of the current crisis.

2.6.1 The Knowledge-Practice Gap and the Triple Burden of Malnutrition

Knowledge does not always translate into healthy habits, according to a 2025 study by Kaur et al. that focused on medical and paramedical students in India. It revealed that 35% of students regularly skipped meals, 42% of students overindulged in fast food, and just 25% of students adhered to WHO recommendations on fruit and vegetable intake. A —triple burden of malnutrition‖ resulted from this knowledge and behavior gap, with a sizable percentage of students being underweight (12.3%), overweight (18.3%), or obese (10.7%). The high prevalence of anemia at 28.6%, which indicates a micronutrient shortage, was more concerning and forced the authors to stress the critical need for focused dietary interventions [2]. Another study from 2025 in Durgapur confirmed this, showing that although some students continued to eat a balanced diet, significant nutritional deficiencies and under nutrition emerged, mostly as a result of poor eating habits and a diet high in processed foods. These unhealthy eating patterns were significantly linked to lower

energy levels, which had an impact on both general wellbeing and academic achievement [1].

2.6.2 The Hostel Environment as a Key Determinant

According to recent studies, the dorm environment is one of the main factors influencing students' health outcomes. Living conditions had a major effect on students' health, according to a 2024 study conducted in Gujarat by Vyas et al. Students who lived in hostels were more likely to be overweight or obese, while those who did not live in hostels were more likely to be underweight. There were also significant differences in eating patterns: hostel residents generally skipped lunch, while non-residents generally skipped breakfast. Fast food consumption was higher among non-hostel residents even though both groups consumed traditional Indian cuisine. Therefore, even though some risks are different for each living arrangement, this study shows that both living arrangements pose significant challenges for adequate nutrition [3].

Furthermore, there is a direct link between hostel meals and health issues. For instance, eating street food was linked to a high prevalence of digestive disorders and hostel meal dissatisfaction, according to a 2025 cross-sectional study of medical students in Peshawar. The authors emphasized the need to improve the quality and appeal of the institutional lunch service in order to protect students' health [11]. This environment has effects that go beyond physical health. A 2022 study led by Qureshi et al. in Lahore reported that hostel residents expressed higher levels of psychological distress, poorer sleep quality, and unhealthier eating behaviors than day scholars, further reinforcing the hostel environment as a nexus of interconnected lifestyle risks [8].

2.6.3 Socio-Economic and Awareness Barriers

More recent studies have better identified a number of barriers to healthy eating. A 2025 correlational study conducted by Azhar et al. in Lahore showed that limited healthy food access was significantly associated with negative health outcomes. It highlighted financial constraints, meal skipping, and grave deficiencies in nutrition knowledge as major contributors to dietary dissatisfaction and poor nutritional health [10]. This again corroborates the findings of Devi and Mishra's 2023 study on adolescent hostel occupants of India, which reported that only 51.44% were within the normal BMI range, while underweight, overweight, and obesity were highly prevalent and linked with low-quality hostel meals and, importantly, also a lack of knowledge [12].

2.7 Evidence Synthesis: Middle-Period Studies, 2019-2022

Research during this period consolidated findings from earlier research, which provided solid evidence that the problem was indeed pervasive, while it also started looking into specific behaviors and their outcomes.

2.7.1 Widespread Documentation of Unhealthy Lifestyles

From 2021 to 2022, the magnitude of the problem is quantified by several studies. A communitybased cross-sectional survey carried out in rural Bihar, India, in 2022 revealed notable risk factors even though the majority of students (57.1%) led ―intermediate‖ healthy lifestyles. In addition to physical inactivity (21.2%) and substance usage (11.7% smoke, 13% alcohol), poor eating habits (82% infrequently consuming fruits) were noted [13]. Similar triple loads of malnutrition—12% underweight, 22% overweight, and 4% obesity—as well as significant contributory variables like physical inactivity (68%) and a high incidence of anemia (48%) were noted in a population-based study conducted in Bahawalpur in 2021 [1]. Junk food consumption and a sedentary lifestyle are closely linked to the estimated 27.97% of overweight or obese university hostel ladies in Lahore [3].

2.7.2 The Emergence of Disordered Eating and Mental Health Links

During this time, research began to focus on particular and significant health effects. A study among female nursing students in the district of Birbhum in 2022 showed that 11% of the students detected as positive for an eating disorder. These disorders were positively associated with higher BMI and body fat percentages, as well as with higher rates of mild anemia and abnormal menstruation, underlining a severe comorbidity between mental and physical health [11]. The hostel factor was again related to psychological health, as findings from Lahore showed that students staying in hostels manifested worse psychological functioning, showing high levels of psychological distress and disturbed sleep, thus showing strong association with living arrangement and mental health [7].

2.7.3 Universal Prevalence of Fast Food

A cross-sectional study conducted in 2018 on fast food consumption among medical students at IGIMS, Patna, found the prevalence of fast food consumption. All students were conscious of the associated health hazards, yet they consumed fast food mostly 1-2 times a week; taste, peer influence, and convenience were the major reasons. This underlined that knowledge alone is not sufficient to bring about changes in unhealthy eating behavior-a fact later reiterated by Kaur et al [8].

2.8 Foundational Research: Early Studies (2016-2018)

Earlier studies included in this review lay the foundation by documenting the prevalence of nutritional deficiencies and linking diets of poor quality to specific health problems.

2.8.1 Identifying Baseline Deficiencies and Health Impacts

Nutritional challenges and health risks were found among the students residing in hostels from 2016 to 2018. In 2018, a cross-sectional research of 304 medical students in Malaysia found that up to 50.6% of them had unhealthy eating habits, demonstrating the prevalence of these behaviors even among medical college students. Age, race, religion, and breakfast sources were important factors that influenced eating behavior, highlighting the necessity of organized nutrition education and the promotion of punctual, well-balanced meals [15].

Comparable research carried out in 2016 and 2017 found widespread dietary deficits and associated issues. According to Roy et al. (2016), Rajbanshi teenage females in North Bengal had a startlingly high rate of stunting (39.6%) and thinness (26%), which was indicative of chronic under nutrition [16]. Anemia was found in 30% of male and 40% of female university students living in hostels in Afghanistan in a 2017 study, indicating widespread nutritional deficits among young adults. Research among girls in Kota hostels also showed that 78% were habitual consumers of calorie-dense junk food and presented early signs of obesity, anemia, diabetes, and skin disorders [18]. A cross-sectional study from Central India found 63.17% medical students complaining of gastrointestinal problems due to poor hygiene conditions in the hostel and erratic eating habits [19].

2.8.2 Initial Explorations of Diet Composition and Broader Impacts

Early research also began to focus on the quality of student diets and their wider implications for health and performance. One study on food habits and antioxidant intake among adolescent girls in 2017 noticed a major trend of shifting toward Western dietary patterns and a general unawareness in the subject, as 55% were uninformed about antioxidants and their benefits [20]. A cross-sectional assessment at the University of Agriculture, Peshawar, showed that despite 63.1% of females who lived in hostels maintaining a normal BMI, the prevalence of anemia was critically high at 73%. Most dietary components were below recommended intake levels; diets were not varied [21].

A 2017 study conducted among female nurses in Delhi reported that approximately 70% of respondents were overweight or obese, even though dietary practices were acceptable and nutritional intake was adequate, pointing out that occupational stress and sedentary behavior may override positive dietary practices [22]. A similar study among students in Saudi Arabia

revealed that though 59% of participants were overweight or obese; there was no statistically significant association between frequent fast-food consumption and weight gain. Additionally, the study reported a knowledge-behavior gap, in that while 56% of the participants had never read nutrition labels, 79% were willing to choose healthier options if available. The authors concluded that health promotion initiatives should be more targeted toward increasing informed dietary choices among university students [23].

Moreover, the 2017 study at the University of Kelaniya, Sri Lanka, showed that normal BMI was positively associated with high GPA scores, suggesting an academic advantage related to healthier nutritional status [24]. According to Omage et al. (2019), age, monthly allowance, parental education, and marital status were important sociodemographic characteristics that influenced students' eating habits and nutritional health [5].

2.9 Summary

The nutritional health of South Asian university students is gravely harmed and continues to be so, according to a recurring and unsettling pattern found in a chronological analysis of the literature from 2025 back to 2016. From identifying specific deficiencies and health issues, research has progressed to gaining a comprehensive understanding of a complex syndrome that includes environmental, economic, and psychological factors, as well as a persistent knowledgepractice gap and the triple burden of malnutrition.

Apart from inadequate food quality, unhealthy eating patterns, mental health problems, and medical conditions like gastrointestinal disorders and anemia, the hostel environment is consistently identified as a high-risk factor. Economic factors, ignorance of nutrition, and the convenience and appeal of fast food are among the enduring problems. Interestingly, the problem impacts students from all fields, including medical and paramedical students, who are supposed to have a deeper awareness of both urban and rural areas in many countries.

The vast amount of evidence collected over the last ten years leads to an urgent conclusion: we need targeted, multifaceted interventions right away. These programs should do more than just teach students about nutrition. They should also focus on bigger problems, like making hostel meals more appealing and of higher quality, making campus food environments more supportive, promoting mental and physical health, and making it easy and cheap for students to make healthy choices. Responses like these will make sure that the current generation of college students, who will be the region's workers in the future, stay healthy.

3. Methodology

3.1 Study Design:

To evaluate the nutritional status of undergraduate nursing students living in public hostels in
Peshawar, this study used a descriptive cross-sectional technique.

3.2 Study Setting

The study was conducted at the Hayatabad Medical Complex (HMC), Lady Reading Hospital
(LRH) and Khyber Teaching Hospital (KTH), three public nursing schools in Khyber Pakhtunkhwa Pakistan. From July 7, 2025 to December 2025, the investigation lasted six months.

3.3 Study Population:

The target population consisted of all undergraduate nursing students living in the government dormitories in Peshawar. There were approximately 400 nursing students residing in these accommodations at the time of this study.

3.4 Sample Size:

The calculated sample size of 179 participants was determined by using Rao soft software, providing a 95% confidence interval and a 5% margin of error.

3.5 Sampling Technique:

A convenient sampling method was used due to time and budget constraint.

3.6 Selection Criteria:

- **Inclusion Criteria**:

Undergraduate nursing students in the age range of 18–25 years, enrolled in public sector nursing colleges of Peshawar, and who had been residing in hostels of LRH, KTH, or HMC for at least six months.

- **Exclusion Criteria:**

Students who suffered from chronic illnesses, those on special diets, or individuals who were not interested to participate were excluded from the research study.

3.7 Data Collection Tool:

Data were collected using an adapted questionnaire that included the following elements:

- Demographic Information
- Anthropometric Measurements
- Dietary History
- Beverage Intake
- Nutritional Knowledge

The Mini Nutritional Assessment (MNA) questionnaire included in the tool, whose internal consistency was found to be good. Its Cronbach's alpha value ranged from 0.72 to 0.88.

3.8 Data Collection Procedure:

The principals of the selected nursing colleges and the Institutional Ethical Review Committee approved the study. Data collection was carried out over a period of three weeks. Participants were informed about the purpose of the study, and written informed consent was obtained before administering the questionnaires. A total of 179 students voluntarily participated in the study and completed the questionnaires, which were subsequently collected.

3.9 Data Analysis:

The latest version of SPSS was used for Data entry and analysis. Descriptive statistics in the form of frequencies, percentages, means, and standard deviations were used. For categorical variables summary statistics were done as frequencies and percentages, while continuous variables were assessed using means and standard deviations.

3.10 Ethical Considerations:

The study was approved by the Institutional Review Board (IRB), and informed written consent was obtained from all participants before data collection. The anonymity and confidentiality were strictly protected throughout the research, and participation was entirely on voluntary basis.

4. Results

4.1 Introduction:

The key findings of the study are presented in this chapter both in descriptive and inferential statistical analyses.

4.2 Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
student nurse height(cm)	179	43.1	139.7	182.8	157.772	6.5816	43.318
student nurse weight(kg)	179	39	36	75	50.35	6.628	43.924
Valid N (list wise)	179						

4.2.1 Student Nurse Age

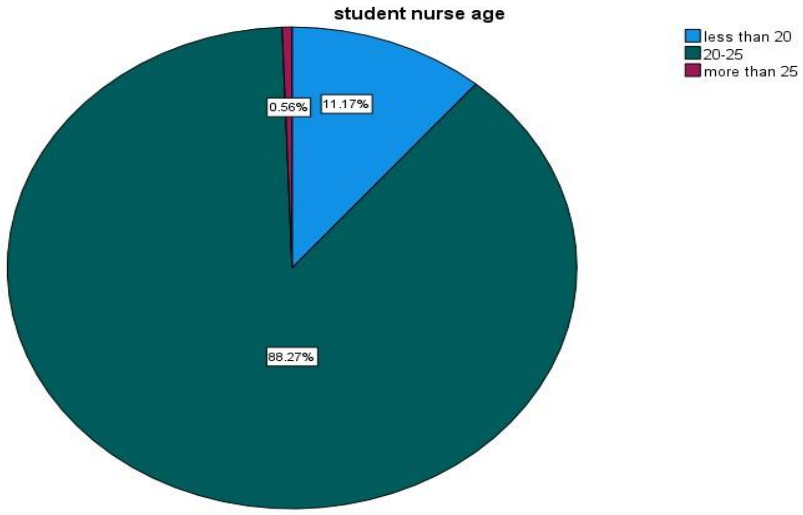

Figure 1: Student Nurse Age

Regarding the age of student nurses, 88.27% of participants were between 20 and 25 years old, 11.17% were younger than 20 years, while 0.56% was older than 25 years.

4.2.2 Gender:

Regarding gender, all of the participants were female.

4.2.3 Academic year:

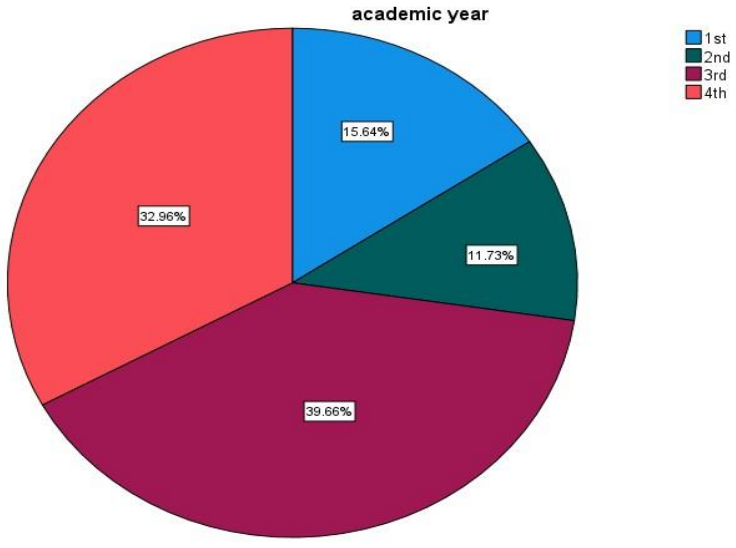

Figure 2: Academic Year

Regarding the academic year of student nurses, 39.66% of participants were in third year, 32.96% were in the fourth year, 15.64% were in the first year, and 11.73% were in the second year.

4.2.4 Place of Residence:

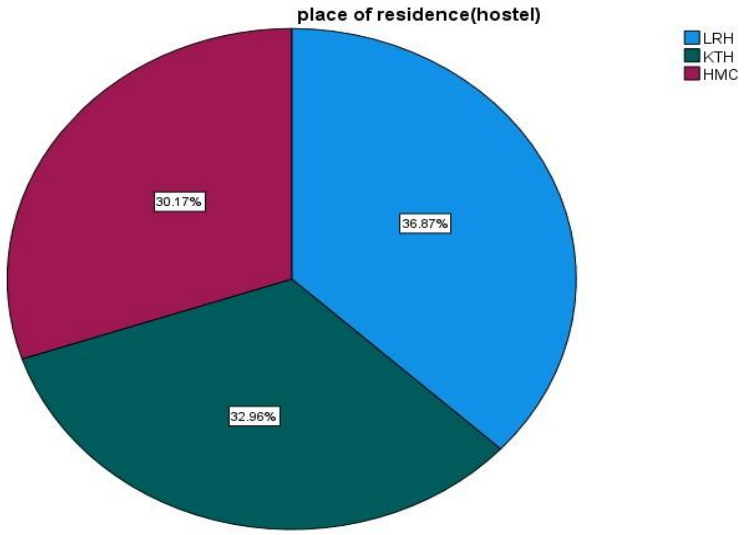

Figure 3: Place of Residence

Regarding the place of residence of nursing students, 36.87% of participants were residing in LRH hostel, 32.96% in KTH hostel, and 30.17% in HMC hostel.

4.2.5 Duration of Hostel Stay:

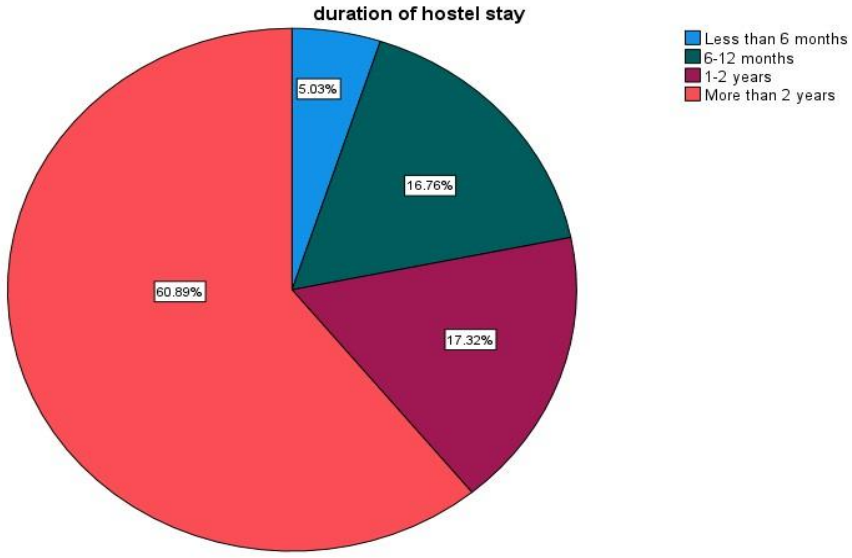

Figure 4: Duration of Hostel Stay

Regarding the duration of hostel stay among nursing students, 60.89% had stayed for more than 2 years, 17.32% for 1–2 years, 16.76% for 6–12 months, and 5.03% for less than 6 months.

4.2.6 Student Nurse BMI:

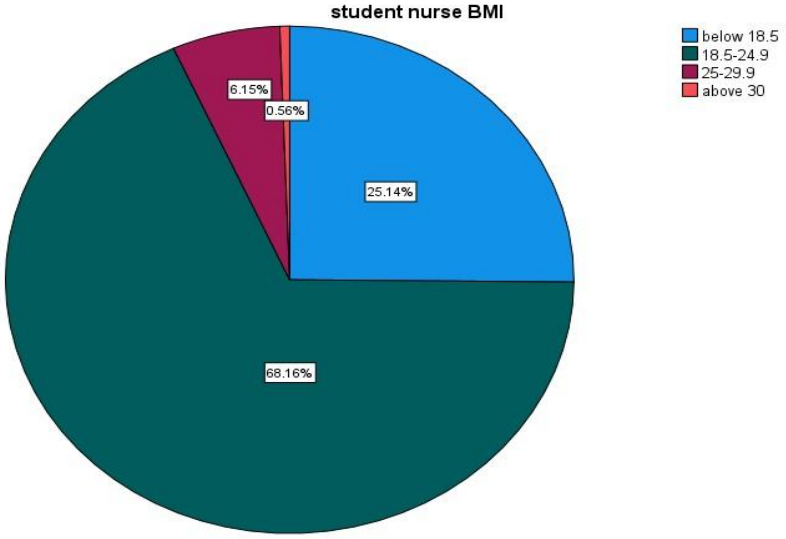

Figure 5: Student Nurse BMI

Regarding the BMI of nursing students, 68.16% had a normal BMI (18.5–24.9), 25.14% were underweight (BMI below 18.5), 6.15% were overweight (BMI 25–29.9), and 0.58% were obese (BMI above 30).

Table 1: *Meal Consumption/Nutritional Knowledge*

Section	Categories	Frequency	Percent
How many meals do you consume daily?	1.One 2.Two 3.Three 4.More than three	1. 7 2. 34 3. 125 4. 13	1. 3.9 2. 19.0 3. 69.8 4. 7.3
How often do you consume fruits per week?	1.Daily 2.3-4 times 3.Rarely 4.Never	1. 41 2. 36 3. 86 4. 16	1. 22.9 2. 20.1 3. 48 4. 8.9
How often do you consume vegetables per week?	1.Daily 2.3-4 times 3.Rarely 4.Never	1. 66 2. 77 3. 32 4. 4	1. 36.9 2. 43 3. 17.9 4. 2.2
How often do you consume grains per week?	1.Daily 2.3-4 times 3.Rarely 4.Never	1. 118 2. 38 3. 19 4. 4	1. 65.9 2. 21.2 3. 10.6 4. 2.2

How often do you consume protein per week?	1.Daily 2.3-4 times 3.Rarely 4.Never	1. 91 2. 49 3. 29 4. 10	1. 50.8 2. 27.4 3. 16.2 4. 5.6
How often do you consume dairy per week?	1.Daily 2.3-4 times 3.Rarely 4.Never	1. 45 2. 22 3. 59 4. 53	1. 25.1 2. 12.3 3. 33 4. 29.6
Water (glasses per day)?	1.Less than 4 2.4-5 3.6-8 4.More than 8	1. 22 2. 43 3. 90 4. 24	1. 12.3 2. 24 3. 50.3 4. 13.4
Milk consumption?	1.Daily 2.Sometimes 3.Never	1. 26 2. 83 3. 70	1. 14.5 2. 46.4 3. 39.1
I am familiar with the basic food groups	1.Strongly agree 2.Agree 3.Neutral 4.Disagree 5.Strongly disagree	1. 96 2. 65 3. 13 4. 4 5. 1	1. 53.6 2. 36.3 3. 7.3 4. 2.2 5. 6
I understand the recommended daily portions for each food group	1.Strongly agree 2.Agree 3.Neutral 4.Disagree 5.Strongly disagree	1. 59 2. 72 3. 41 4. 6 5. 1	1. 33 2. 40.2 3. 22.9 4. 3.4 5. 6
I know the functions of basic nutrients (carbohydrates, protein, fats)	1.Strongly agree 2.Agree 3.Neutral 4.Disagree 5.Strongly disagree	1. 136 2. 34 3. 8 4. 1 5. 0	1. 76 2. 19 3. 4.5 4. 6 5. 0
I believe my current diet is healthy	1.Strongly agree 2.Agree 3.Neutral 4.Disagree 5.Strongly	1. 38 2. 40 3. 54 4. 34 5. 13	1. 21.2 2. 22.3 3. 30.2 4. 19 5. 7.3

	disagree				
I understand how poor nutrition affects health(e.g. obesity, anemia)	1.Strongly agree 2.Agree 3.Neutral 4.Disagree 5.Strongly disagree	1. 2. 3. 2 5.	127 44 5 4. 1	1. 2. 3. 4. 5.	70.9 24.6 2.8 1.1 6
I am aware of the importance of nutrition for maintaining physical and mental performance during clinical duties	1.Strongly agree 2.Agree 3.Neutral 4.Disagree 5.Strongly disagree	1. 2. 3. 4. 5.	107 57 13 1 1	1. 2. 3. 4. 5.	59.8 31.8 7.3 6 6
I understand how stress and irregular meal patterns can affect nutritional status	1.Strongly agree 2.Agree 3.Neutral 4.Disagree 5.Strongly disagree	1. 2. 3. 4. 5.	115 54 10 0 0	1. 2. 3.	64.2 30.2 5.6
I am knowledgeable about the role of balanced diet in overall health and cognitive function	1.Strongly agree 2.Agree 3.Neutral 4.Disagree 5.Strongly disagree	1. 2. 3. 2 5.	108 64 2 4. 3	1. 2. 3. 4. 5.	60.3 35.8 1.1 1.1 1.7

Result in table#1 shows regarding statement#1—How many meals do you consume daily? ‖ (69.8%) of respondents reported consuming three meals a day, (19.0%) consume two meals, (7.3%) consume more than three meals, while only (1.3%) consume one meal per day.

Concerning statement#2—How often do you consume fruits per week? ‖ (48%) of respondents rarely consume fruits, (22.9%) consume fruits daily, (20.1%) consume 3–4 times per week, while (8.9%) never consume fruits. Regarding statement#3—How often do you consume vegetables per week? ‖ , (43%) of respondents consume vegetables 3–4 times a week, (36.9%) consume them daily, (17.9%) rarely consume vegetables, and (2.2%) never consume them. Regarding statement#4—How often do you consume grains per week? ‖ (65.9%) of respondents reported consuming grains daily, (21.2%) consume 3–4 times a week, (10.6%) rarely, and (2.2%) never.

Concerning statement#5—How often do you consume protein per week? ‖ (50.8%) of respondents consume protein daily, (27.4%) 3–4 times a week, (16.2%) rarely, and (5.6%) never. Regarding statement#6—How often do you consume dairy per week? ‖ (33%) of respondents rarely consume dairy products, (29.6%) never consume, (25.1%) consume daily, and (12.3%) consume 3–4 times per week. Regarding statement#7 —Water (glasses per day)? ‖ (50.3%) of respondents consume 6–8 glasses daily, (24%) consume 4–5 glasses, (13.4%) consume more than 8 glasses, while (12.3%) consume less than 4 glasses per day. Regarding statement#8—Milk consumption? ‖ (46.4%) of respondents reported sometimes consuming milk, (39.1%) never consume milk, while only (14.5%) consume milk daily.

Regarding statement #9: —I am familiar with the basic food groups, ‖ (53.6%) of respondents strongly agreed, (36.3%) agreed, (7.3%) were neutral, (2.2%) disagreed, and (0.6%) strongly disagreed. Regarding statement #10: —I understand the recommended daily portions for each food group, ‖ (33%) of respondents strongly agreed, (40.2%) agreed, (22.9%) were neutral, (3.4%) disagreed, and (0.6%) strongly disagreed. Regarding statement #11: —I know the functions of basic nutrients (carbohydrates, protein, fats), ‖ (76%) of respondents strongly agreed, (19%) agreed, (4.5%) were neutral, and (0.6%) disagreed, with none strongly disagreeing.

Regarding statement #12: —I believe my current diet is healthy, ‖ (21.2%) strongly agreed, (22.3%) agreed, (30.2%) were neutral, (19%) disagreed, and (7.3%) strongly disagreed.

Regarding statement #13: —I understand how poor nutrition affects health (e.g., obesity, anemia), ‖ (70.9%) strongly agreed, (24.6%) agreed, (2.8%) were neutral, (1.1%) disagreed, and (0.6%) strongly disagreed. Regarding statement #14: —I am aware of the importance of nutrition for maintaining physical and mental performance during clinical duties, ‖ (59.8%) of respondents strongly agreed, (31.8%) agreed, (7.3%) were neutral, (0.6%) disagreed, and (0.6%) strongly disagreed. Regarding statement #15: —I understand how stress and irregular meal patterns can affect nutritional status ‖ there were no reports of dissent; 64.2% of respondents strongly agreed, 30.2% agreed, and 5.6% were indifferent. Concerning statement #16: —I am knowledgeable about the role of balanced diet in overall health and cognitive function, ‖ (60.3%) strongly agreed, (35.8%) agreed, (1.1%) were neutral, (1.1%) disagreed, and (1.7%) strongly disagreed.

4.3 Inferential Statistics

4.3.1 Correlation Analysis

To assess the relationship between continuous variables, a Pearson correlation test was used.

Height and Total Score($r = 0.088$, $p = 0.240$, $N = 179$): A weak, insignificant positive relationship is reflected in the result suggesting that variations in height do not decisively influence the total score.

2. **Height and Meal Consumption Score ($r = -0.009$, $p = 0.903$):** This shows a very weak negative correlation; no significant relationship can be suggested.
3. Meal Consumption Score and Weight: The correlation was, $r = -0.013$, $p = 0.862$. This was a negative and non-significant association; hence meal consumption and body weight has no relationship.

4.3.2 One-Way ANOVA Results

1. **Meal Consumption Score by Age:**

No difference appeared statistically significant across different age groups: $F(2, 176) = 0.371$, $p = 0.690$. Consequently, the pattern of meal consumption was similar; Mean = 17.32, SD = 3.08.

2. **Meal Consumption by Academic Year:**

Academic year has shown a significant effect: $F(3,175) = 3.665$, $p = 0.014$, although Tukey's post-hoc test revealed that only the difference between first and third-year students reached significance: Mean Diff = -1.86, $p = 0.031$.

3. **Meal Consumption by Place of Residence:**

The residence groups has shown no statistically significant difference: $F(2, 176) = 2.487$; $p = 0.086$. The mean scores of the residence groups were as follows: LRH, 17.27; HMC, 18.09; and KTH, 18.46, indicating slight variations.

4. **Meal consumption by Duration of hostel stay:**

One-way ANOVA yielded a significant difference; $F(3,175) = 3.199$, $p = 0.025$. The post-hoc test showed that those who stayed more than 2 years scored significantly higher compared to those who stayed less than 6 months, with a Mean Diff. of 2.73 and a significance level of 0.049.

5. **Meal Consumption by BMI:**

No significant differences were observed; $F(3,175) = 0.053$, $p = 0.984$, thus indicating no effect of BMI on meal consumption.

4.3.3 Status of Agreement Score

1. **By BMI**:

No significant differences were indicated by ANOVA: ($F\ 3,175 = 0.833$, $p = 0.477$). The level of agreement was not affected by variation in BMI.

2. **By Duration of Hostel Stay:**

The one-way ANOVA revealed a significant difference: $F(3,175) = 3.852$, $p = 0.011$; Tukey's test revealed that this was due to a significant mean difference

between 6-12 month stayers and over 2-year stayers: Mean Diff = 1.97, p = 0.015.

3. By Place of Residence:

Overall, significant group differences were indicated, F (2,176) = 5.238, p = 0.006. KTH participants had the highest scores, M = 14.23, which was significantly higher than that of participants in HMC, M = 12.31 (p = 0.004).

4. By Academic Year:

A highly significant difference was shown by One-way ANOVA, F (3,175) = 8.380, p < 0.001, and post-hoc comparisons showed first-year students to be in significantly higher agreement than third- and fourth-year students, p < 0.001.

5. By Age:

The difference was significant: F (2, 176) = 3.295, p = 0.039, whereby younger participants (20-
29 years) had slightly higher mean agreement levels.

4.3.4 Significant Variables

	Variable	Groups Compared	Mean Difference	P-value	95% CI (LowerUpper)
Total Score of Meal Consumption	Academic Year	1st vs. 3rd	-1.86	0.031	-3.60 to –0.12
	Duration of Hostel Stay	Less than 6 months vs. More than 2 years	-2.73	0.049	-5.45 to –0.01
Total Score of State of Agreement	Academic Year	1st vs. 3rd	2.64	0.001	0.87 to 4.41
		1st vs. 4th	3.32	0.000	1.50 to 5.14
	Duration of Hostel Stay	6-12 months vs. more than 2 years	1.97	0.015	0.28 to 3.6
	Place of Residence	KTH vs. HMC	1.92	0.004	1.51 to 3.33

4.4 Summary

Inferential statistics revealed no significant associations of meal consumption or overall scores with the anthropometric variables of height, weight, or BMI. However, there were significant variations in meal consumption and agreement scores with regard to academic year, type of residence, and length of hostel stay. First-year students showed higher agreement scores compared

with their older peers. Students who had stayed in hostels for more than two years had better meal consumption scores. Students from KTH hostel also expressed higher agreement than those from HMC.

5. Discussion

5.1 Introduction

This chapter expands on the main results of this study in response to the research question by interpreting them in the light of the literature. The discussion will focus on the nutritional status, dietary habits, and associated factors of undergraduate nursing students who reside in public sector hostels in Peshawar. Further, the results are compared with the findings from other studies, which also focus on food and lifestyle to present comparisons and differences. It also interprets implications for health education and policy, and directions related to future research, and thus conclude by summarizing the key findings of the study as a whole.

5.2 Nutritional Status Among Undergraduate Nursing Students

It was revealed that 68.16% of the students had a normal BMI, while 25.14% were underweight, 6.15% overweight, and 0.58% obese; indeed, the prevalence of underweight status surpassed that of overweight. Kaur et al. also observed similar trends-a triad of malnutrition among Indian medical students where underweight, overweight, and obesity existed together [8]. A study by Devi and Mishra revealed that only 51.44% of hostel students have normal BMI and attributed the irregularities to poor food quality in hostels and lack of nutrition awareness [12]. Azhar et al. also found limited access to healthy foods and constrained economic status negatively impacted the nutritional status of hostel students in Lahore [10].

While the current study stands in contrast to reports of higher overweight and obesity prevalence, such as the one by Shabbir et al., who found that 27.97% of students were overweight or obese due to eating junk food and sedentary activities in Bahawalpur [3]. Similarly, Saha et al. linked over-nutrition and unhealthy eating behaviors to higher levels of body fat in nursing students of Birbhum [11]. Even a recent 2021 study from Bahawalpur showed a significant burden of overweight [1]. Conversely, Roy et al. reported a high prevalence of stunting and thinness among adolescent girls in North Bengal. This points out chronic under nutrition in resource-poor settings [16]. In Afghanistan, anemia was prevalent in 30% of male and 40% of female hostel students, showing micronutrient deficiencies besides variable BMI outcomes [17].

These variations are a reflection of changing dietary patterns, academic stress, cost, food quality in hostels and regional contexts.

5.3 Consuming a Meal and Dietary Patterns

In this study, the majority of participants, 69.8%, consumed three meals per day; however, the consumption of fruits, dairy products, and proteins was found to be insufficient. Almost half of them often consumed fruits, while one-third rarely took dairy into their diet. Vyas et al. identified that meal skipping and discontentment with hostel food among students led to eating unhealthy foods [2]. Qureshi et al. also reported poor eating and increased psychological stress in hostel students compared to day scholars [6]. One study from Peshawar indicated that there is an association between inadequate hostel meals and excessive dependence on street food, which causes digestive disorders [4].

On the other hand, hostel students were more likely to be overweight in studies conducted in Gujarat, related to high-caloric, protein-rich diets and skipping lunches unrelated to deficiencies [2]. A study in Sri Lanka has shown a link of higher BMI with better academic performance, reflecting adequate or excessive caloric intake in that setting [24]. In Central India, gastrointestinal disturbances related to compromised hostel sanitation and irregular eating habits were reported [19].

The results on protein intake in this study are also In agreement with the findings of Shekhar et al., who reported low intake of protein, fruits, and dietary diversity among university students in India [13]. Similarly, Saha et al. reported that one-third of the nursing students were unable to meet their average daily protein requirement, thus creating health hazards [11]. On the other hand, a study conducted among nurses in Delhi revealed adequate nutrient consumption but a high prevalence of obesity, proving that a sedentary lifestyle and work pressure adversely affected dietary adequacy [22]. Generally speaking, higher meal frequencies cannot guarantee nutritional sufficiency if the quality and variety of food are inadequate.

5.4 Nutritional Knowledge and Awareness

Awareness of a proper diet and the consequences of poor nutrition were good in most participants. This is in line with the observations by Kaur et al., where the awareness was high, though the knowledge to practice gap was significant among medical students [8]. Azhar et al. and Qureshi et al. also found adequate knowledge with poor practice on account of the environment and economic compulsions [10, 6]. The good knowledge scores in this study could be due to the nursing background of the participants, as it is noted that students studying health sciences generally have better awareness about nutrition [15].

On the other hand, the study by Devi and Mishra revealed that only half of hostel residents have sufficient knowledge about nutrition [12]. Similarly, the

Roy et al. study discovered that teenage girls knew very little about the functions of nutrients [20]. Nutrition awareness and the adoption of healthy practices have been found to be influenced by a wide range of sociodemographic factors, such as parental education, financial support, and institutional exposure [5, 21].

Despite having adequate knowledge of nutrition, there was little practical application highlighting the well known disconnect between student population' knowledge and practice.

5.5 Association of Demographic and Institutional Factors

Academic year, length of hostel stay, and institutions were all substantially correlated with nutritional awareness. Higher levels of dietary awareness were linked to longer hostel stays, which is consistent with the findings of Vyas et al. that long-term residents adapted to regular meal schedules [2]. In addition, differences between universities were found, suggesting that campus food services affected nutrition, which is consistent with studies done in Peshawar dorms [4].

Qureshi et al. [6] found that longer stays in hostels were linked to worse eating habits and a higher psychosocial burden. Shabbir et al. and Saha et al. [3, 11] also found that bad eating habits were a sign of a high BMI. These differences could be due to cultural and social factors, the availability of nutrition programs on campus, and the fact that different schools have different food policies.

5.6 Summary

The purpose of the study was to evaluate the eating habits and nutritional condition of undergraduate nursing students residing in Peshawar's public hostels. Despite the fact that most students had appropriate BMIs, a sizable portion was underweight, which suggests inadequate eating habits and food intake. Hostel living and academic workload appear to have a significant impact on eating habits, as seen by the typical practice of eating meals less frequently, missing breakfast, and depending on fast food and accessible snacks.

These nutritional problems were caused by a number of factors, including limited availability to nutrient-dense food, tight budgets, a lack of knowledge about nutrition, and conflicting study schedules. There is a significant gap between nutritional knowledge and its practical application, as seen by the concerning rate of bad eating habits among aspiring healthcare workers. As a result, the study emphasized the necessity of improving nutrition-based knowledge and fostering a healthy eating environment and behavior for nursing students living in dorms. These results serve as a

foundation for focused initiatives such as student awareness campaigns, improved hostel food services, and nutrition counseling programs.

Additionally, encouraging healthy eating in the classroom may help students manage their lifestyles later in life and may have an impact on their personal and professional contributions once they start working in the healthcare industry.

6. Conclusion

The study's results show that there are differences in the demographic and lifestyle factors related to nutritional status among undergraduate nursing students living in public sector dormitories in Peshawar. Most of the students had normal BMIs, but a lot of them were underweight and some were overweight, which shows that they ate differently. Students knew a lot about nutrition, but their eating habits didn't always show it. The study's findings indicate that among undergraduate nursing students residing in Peshawar's public sector dormitories, there exist variations in the demographic and lifestyle attributes linked to nutritional status.

Most of the students had normal BMIs, but a significant number were underweight and some were overweight, which shows that their diets were different. Students had a good understanding of nutrition, but their eating habits didn't always show that. The study found that the number of meals eaten was enough, but the fact that people didn't eat enough fruit and dairy products meant that there wasn't a lot of variety in the food. Some of the things that affect people's eating habits and nutritional status are not having enough money, school stress, irregular eating patterns, and the quality of food in hostels. Also, there were interesting links between meal intake and other things like the academic year, how long a student stays in a dorm, and where they live. These results suggest that where a student lives and how stressed they are about school may affect how they eat.

In conclusion, while the majority of nursing students comprehend the importance of maintaining a balanced diet, various behavioral, environmental, and socioeconomic barriers hinder their ability to do so. In order to improve their health, academic performance, and readiness for work as future healthcare workers, it is important to deal with these problems at the institutional and policy levels. In conclusion, most nursing students know how important it is to eat a balanced diet, but there are many behavioral, environmental, and socioeconomic factors that make it hard for them to do so. To enhance their health, academic achievement, and preparedness for future employment in healthcare, it is essential to address these issues at both institutional and policy levels.

Recommendations

The study's conclusions lead to the following recommendations:

1. To fill in nutritional gaps that have been found, institutions should often run programs that stress getting enough fruits, dairy, and water.
2. It is important to have nutrition reinforcement sessions throughout the school year, especially for third- and fourth-year students who don't agree as much as first-year students.
3. Because so many of the participants were underweight, health and nutrition screenings should be done on a regular basis to find underweight students and give them the right nutrition advice.
4. Authorities should implement basic dietary guidelines for hostel meals and integrate practical nutrition education into the curriculum.
5. Future research studies should include students living in private dorms as well as other factors like economic status and physical activity that may help clarify the effects of eating habits and nutritional status.

Strengths of the Study

1. This study is among the few that look at the nutritional status of nursing students living in public dorms in Pakistan.
2. The use of structured questionnaires and standardized BMI measurements ensured data
collection accuracy and reliability.
3. To evaluate the data, both descriptive and inferential statistical methods were applied.
4. To get a more complete picture of the issue, the study also evaluated eating habits and nutritional knowledge.
5. The results provide meaningful baseline information for policymakers, educators, and future researchers who seek to develop targeted nutritional interventions.

Weaknesses of the Study

1. Most of the dietary information obtained was self-reported, which could be prone to recall bias.

2. Seasonal variations in the availability and consumption of food items were not considered.

3. The psychological and emotional aspects that influence eating behavior were not completely addressed.

4. The cross-sectional design limits the ability to observe changes over time.

Limitations of the Study

1. Since only a little previous research on hostel-residing nursing students in Pakistan was found, the related findings from other fields were relied upon.

2. The study only focused on three public sector hostels in Peshawar, which limits generalizing to all nursing institutions.
3. Incorrect information given by some students due to fear of judgment, might affect the reliability of data.
4. With no biochemical measures and clinical nutritional assessments available, objective evaluation of the nutritional status was limited.
5. There is also a lack of consideration of the samples' physical activity and economic status, which could influence both dietary behaviors and BMI.

Implications of the Study

1. Strengthen the nutrition content within the nursing programs to assure that at all year levels, students uniformly apply nutritional knowledge.
2. Encourage nursing students to develop healthy eating behaviors that allow them to model and promote these behaviors effectively in their patients.
3. Food quality in hostels should be improved, as longer duration of stay was associated with a better diet, especially among freshers.
4. Encouraging students to eat well can help them stay strong, think clearly, and work hard during clinical duties.
5. Healthy eating makes students healthier overall, which enables nurses to educate patients and the community about health.
6. To create standards for wellness initiatives and nutrient-rich living spaces, lawmakers and nursing schools should work together more closely.

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