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# ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE OF NURSING STUDENTS REGARDING DISASTER PREPAREDNESS IN PUBLIC AND PRIVATE NURSING COLLEGES OF ISLAMABAD

**Muhammad Imran[*1], Awais Ahmad[2], Ujala Sajjad[3], Waqas Ahmad[4], Ahmad Zuraiz Shah[5], Sajjad Hassan[6], Irsa Irum[7], Muhammad Bilal[8]**

[*1,8]*Department of Nursing, Bashir Institute of Health Sciences, Islamabad*

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**Corresponding Author:**
**Muhammad Imran**

**Abstract**

*Introduction: Nations are increasingly vulnerable to crises, making the management of healthcare systems and healthcare professionals more challenging. Nursing staff and student nurses play a vital role in disaster response, and therefore, having adequate knowledge and competence in disaster preparedness is essential. The aim of the present study was to assess the knowledge, attitude, and practice (KAP) of nursing students regarding disaster preparedness. Methodology: A descriptive cross-sectional quantitative study was conducted among 197 nursing students from four nursing institutions: Bashir Institute of Health Sciences (BIHS), Pakistan Institute of Medical Sciences (PIMS) School of Nursing, Federal Government Nursing College (FGPC), and Rawal Nursing College (RNC) in Islamabad. A structured questionnaire assessing knowledge, attitudes, and practices related to disaster preparedness was administered to undergraduate students from all academic years. Results: The findings revealed that most participants had adequate knowledge (72%) and a positive attitude (75%) toward disaster preparedness. However, a majority demonstrated inadequate practice (65%). Conclusion: Although the participating nursing students showed sufficient knowledge and a positive attitude toward disaster preparedness, their practical skills were lacking. Continuous education, hands-on training, and regular drills are essential to strengthen their competencies and prepare them to effectively manage potential emergencies or disasters. The outcomes of this study can help guide the development of educational policies and training programs aimed at improving disaster preparedness among nursing students.*

***Keywords***: *Disaster Preparedness, Knowledge, Attitude, Private and Public Nursing Colleges*

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## INTRODUCTION

### Background

The International Federation of Red Cross and Red Crescent Societies (IFRC) defines a disaster as a major disruption in a community's functioning that exceeds its ability to cope with its own available resources. Disasters may arise from natural, man-made, or technological hazards, and their impact is shaped by the level of exposure, vulnerability, and resilience within a community.

Nurses form the frontline of the healthcare workforce and play an essential role in disaster preparedness, especially in emergency settings. Their effectiveness relies heavily on adequate knowledge and appropriate clinical skills to manage a wide range of complex and unpredictable situations (Najafi Ghezeljeh et al., 2019).

Similarly, the United Nations Office for Disaster Risk Reduction (UNDRR) describes a disaster as a serious interruption of societal or community functions resulting from hazardous events, which interact with existing vulnerabilities and capacities. Such disruptions may cause significant human, material, economic, or environmental losses (UNDRR, 2017).

In recent years, both natural and human-made disasters have increased worldwide. Because these incidents often occur suddenly, it is crucial for healthcare professionals—particularly nurses—to be trained and equipped with the knowledge, skills, and tools required to respond effectively before, during, and after a disaster (Abdul Hussein & Khalaf Awad, 2022). The type, frequency, and magnitude of disasters vary depending on geographic location, population characteristics, and socioeconomic conditions (Nofal et al., 2018).

According to the Annual Disaster Statistical Review 2016, Asia experienced approximately 4,800 disaster-related deaths in the previous decade, which was lower than earlier decades. However, the number of people affected was significantly high—over 416 million—mainly due to prolonged drought in South Asia, which alone affected nearly 330 million individuals. Economic losses reached about 70 billion USD, with East Asia accounting for the highest proportion due to severe floods and earthquakes. Although mortality was below average, the human and economic impacts were substantially above long-term trends (Guha-Sapir et al., n.d.).

The World Disaster Report (2016) also noted that earthquakes, landslides, floods, and heat waves caused 32,550 deaths worldwide, with Asia accounting for 67% of these fatalities. Pakistan is considered highly vulnerable to disasters. The Asian Disaster Reduction Center (ADRC) reported that the country faces moderate to severe exposure to natural hazards due to its geographical and climatic characteristics. Events such as landslides, floods, earthquakes, and occasional tsunamis pose significant risks (Mehmood, n.d.).

One major disaster occurred on 8 October 2005, when a powerful earthquake caused massive destruction across 30,000 square kilometers. The disaster affected 3.2–3.5 million people, caused nearly 73,000 deaths, and injured around 79,000 individuals. In addition, more than 400,000 homes were damaged or destroyed, displacing about half a million families. Food insecurity affected 2.3 million people, and approximately 955,000 school children and 800,000 women of reproductive age were directly impacted (NDMA, 2005).

A cross-sectional study conducted from July 2021 to March 2022 at Ziauddin University, Karachi, and Benazir College of Nursing, Larkana, evaluated disaster preparedness among 175 undergraduate nursing students. The study found that most participants were female (58.29%), and the majority were aged 21–30 years. Knowledge, attitude, and practice scores were moderate, with significant differences in practice based on age. Male students showed slightly higher knowledge, whereas female students demonstrated a more positive attitude (Ghouri et al., 2023).

In another study conducted in 2024 at Mardan Medical Complex, 145 final-year nursing students and trainee nursing officers demonstrated good knowledge of disaster management, although attitudes varied. While 41.1% believed that institutions should be prepared for disasters, more than half had not participated in disaster drills. However, over 70% felt confident in assessing victims during emergency evacuations (Shaista et al., 2025).

### Significance

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Pakistan frequently experiences natural and man-made disasters, making it essential for the healthcare system especially nursing professionals and students to be well prepared. Nurses play a key role in disaster response, and their knowledge and skills directly influence patient outcomes. Therefore, assessing nursing students' knowledge, attitudes, and practices is important to ensure they are adequately prepared as future healthcare providers.

**Research Gap**

Previous studies, such as those conducted by Shaista et al. in Mardan and Ghouri et al. in Karachi and Larkana, focused mainly on final-year students, trainee nurses, or Post-RN nursing students. However, there is limited research focusing exclusively on generic (BSN) nursing students, particularly in Islamabad. Moreover, earlier studies did not clearly classify whether overall knowledge and practice levels were adequate or whether attitudes were positive or negative. This study addresses these gaps by evaluating the knowledge, attitudes, and practices of undergraduate nursing students enrolled in Islamabad-based nursing colleges.

**Research Questions**

1. What is the level of nursing students' knowledge regarding disaster preparedness?
2. Do nursing students have a positive or negative attitude toward disaster preparedness?
3. What is the level of nursing students' practice regarding disaster preparedness?

Research Objectives

To assess the knowledge, attitude, and practice of nursing students regarding disaster preparedness.

Operational Definition

**Disaster Preparedness:**

The ability of nursing students to plan for, respond to, and manage major emergencies within an academic or clinical setting. This includes understanding disaster protocols, recognizing responsibilities, and participating in practical preparedness activities such as drills, emergency simulations, awareness sessions, and disaster plan development.

**Knowledge:**

The extent to which nursing students understand disaster types, preparedness measures, emergency procedures, evacuation protocols, and basic response mechanisms.

**Attitude:**

Students' perceptions, beliefs, and willingness to engage in disaster preparedness. This includes motivation to participate in training, confidence in responding to disasters, and the perceived importance of preparedness.

**Practices:**

The actual behaviors and actions performed by nursing students in relation to disaster preparedness, such as participating in drills, attending training sessions, maintaining emergency supplies, and applying learned procedures during simulations.

## LITERATURE REVIEW

A literature review involves a critical evaluation of previous research and helps identify what is already known and what remains unexplored regarding a specific topic. Among various approaches to reviewing literature, the narrative review is widely considered effective because it summarizes and synthesizes studies that share similar objectives and research purposes. It also provides clarity on the existing knowledge gaps that justify the present study.

Several online databases and search engines are commonly used to locate relevant scholarly publications. For this research, literature was retrieved primarily from Google Scholar, PubMed, and Scite AI. Articles were searched using both MeSH terms and general keywords. Advanced search filters were applied to refine results—only studies published within the last five years and written in English were included.

Aurelio et al. (2022) A descriptive-correlational study was conducted at the College of Nursing, Nueva Ecija University of Science and Technology, Philippines, involving 507 nursing students. The results showed high awareness of disaster preparedness (M = 4.22), particularly in planning, warning systems, response mechanisms, training,

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and mock drills. However, students demonstrated only moderate understanding of vulnerability assessment, institutional frameworks, information systems, and resource availability. Their attitudes were very positive (M = 4.40), especially in emotional and behavioral aspects, although cognitive perceptions were moderate. Practices were rated adequate (M = 3.74), supported mostly through drills and online learning resources. The study concluded that family preparedness and training sessions enhanced students' willingness to respond during disasters. It emphasized the need for regular drills, simulations, and training programs to strengthen disaster-response competencies.

Radhika & Colleagues (2018) A cross-sectional study was conducted in a General Hospital in Khammam, Telangana, to assess nursing students' knowledge and attitudes regarding disaster preparedness. Fifty students were selected through convenience sampling. Most participants (94%) were aged 20–22 years, and 86% were female. The findings revealed that 72% had a moderate level of knowledge, while 14% had poor knowledge. Attitudes were overwhelmingly positive, with 98% showing a favorable attitude. However, many students did not agree that disasters could also occur within healthcare facilities. Overall, the study indicated a significant gap in students' knowledge despite their positive attitudes.

Mohamed et al. (2023) A cross-sectional online survey was conducted among 206 nursing students from various academic years in Saudi Arabia to assess disaster preparedness. Findings showed that 69% had adequate knowledge and 72% held positive attitudes, but 84% demonstrated inadequate disaster-related practices. Knowledge was significantly associated with GPA, attitude with gender, and practice with age. Despite general awareness of disaster principles, students lacked practical training and participation in drills. The authors recommended continuous education, hands-on simulations, and integrating disaster preparedness into nursing curricula.

Kolaç et al. (2024) a descriptive study was conducted among 400 nursing students from both public and private universities in Istanbul, Turkey. Using online questionnaires, researchers assessed disaster risk perception and sustainable earthquake awareness. Results showed that 61.8% had previously experienced a disaster, while 76.8% felt unprepared for future disasters. Disaster risk perception was lower among students who had prior knowledge, disaster management plans, or formal training, whereas those living with more people had higher risk perception. Sustainable earthquake awareness was significantly higher among private university students. The study emphasized the need for education and training to improve preparedness.

Nisrina et al. (2024) a descriptive study conducted at Poltekkes Kemenkes Tasikmalaya, Indonesia, assessed disaster preparedness among 276 students. Most participants were aged 21 years (51.4%) and female (87.3%). Knowledge of Basic Life Support (BLS) was generally high, with 40.9% rated excellent and 41.7% good. However, disaster preparedness knowledge was weaker: 40.6% had moderate knowledge and 15.9% had poor knowledge. These findings highlighted the need for more practical disaster-related training, simulations, and interactive teaching methods to better prepare future healthcare professionals.

Hasan et al. (2022) A cross-sectional study among 380 nursing students from eight nursing colleges in Dhaka, Bangladesh, assessed perceived disaster preparedness, response ability, recovery ability, and readiness using the Disaster Preparedness Evaluation Tool (DPET). Students reported moderate levels of preparedness, response ability, and recovery ability, but overall readiness was low. About one-quarter stressed the importance of drills and practical exercises. Students from public institutions scored significantly higher than those from private colleges. The study recommended incorporating structured disaster management courses, regular drills, and simulation training into nursing programs.

Ghouri et al. (2023) A cross-sectional study conducted at Ziauddin University, Karachi, and Benazir College of Nursing, Larkana, included 175 undergraduate nursing students. Most participants (58.29%) were female, and 63.42% were aged 21–30 years. Mean scores for disaster preparedness were Knowledge = 3.10, Attitude = 6.05 and Practice = 3.1.

A significant difference was observed in practice scores based on age (p = 0.047). Males scored higher

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in knowledge, whereas females demonstrated more positive attitudes. No significant associations were found between clinical experience and preparedness outcomes. The study recommended improving practical training and strengthening curriculum-based disaster education.

Shaista et al. (2024) A quantitative cross-sectional study was carried out at Mardan Medical Complex, Mardan, involving 145 final-year nursing students and trainee nursing officers. Findings revealed strong knowledge of disaster management—35.2% reported having considerable prior exposure to the topic, and 42.8% clearly understood disaster-planning procedures. Despite good knowledge, two-thirds displayed a negative attitude toward disaster management, while just over one-third expressed positive attitudes. Most students (73.3%) were willing to participate in disaster-response teams, and about half agreed that disaster plans should be regularly updated. However, 51% reported never having participated in disaster drills. Over 60% understood staff roles during emergencies, and nearly 70% felt confident in assessing victims during evacuations. The study emphasized the need for improved drills and engagement in practical disaster training.

## METHODOLOGY

**Research Design:**

This study employed a descriptive cross-sectional quantitative research design using a survey approach. Undergraduate nursing students from the sixth and eighth semesters were selected to complete a structured questionnaire assessing their knowledge, attitudes, and practices (KAP) related to disaster preparedness.

**Study Setting:**

The study was conducted in four nursing colleges located in Islamabad:

1) Bashir Institute of Health Sciences (BIHS)
2) Pakistan Institute of Medical Sciences (PIMS) School of Nursing
3) Federal Government Polyclinic (FGPC) College of Nursing
4) Rawal Nursing College (RNC)

**Study Duration:**

Data were collected over a four-month period, from August 2025 to November 2025

**Population and Sampling:**

Study population is comprised of undergraduate nursing students in the selected colleges of Islamabad. A convenient non-probability sampling technique was applied to select participants from the colleges in Islamabad.

**Population:**

The study population consisted of sixth- and eighth-semester undergraduate nursing students enrolled in the selected nursing colleges of Islamabad.

**Sampling Technique:**

A non-probability convenience sampling technique was used to select participants. This method facilitated easy access to eligible nursing students present during college hours.

**Sample Size:**

A sample size of 197 undergraduate nursing students was determined using the Raosoft sample size calculator. The calculation was based on a total population of approximately 350 nursing students across the four selected nursing colleges, with a 95% confidence level and a 5% margin of error.

**Inclusion Criteria:**

Undergraduate nursing students from PIMS School of Nursing, FGPC College of Nursing, Rawal College of Nursing, and Bashir Institute of Nursing.
Students enrolled in the third year (sixth semester) or final year (eighth semester).
Students willing to participate and who provided informed consent.
Only nursing students were included.

**Exclusion Criteria:**

Students enrolled in the first or second year of the nursing program.
Students from non-nursing disciplines (e.g., Doctor of Physical Therapy, Allied Health Sciences).
Individuals who were unwilling to provide informed consent.

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**Measurement Instrument:**

An adapted questionnaire consisting of four sections was used:

**Demographic**

Included information such as age, gender, living conditions, semester, and participation in disaster drill committees

Knowledge about Disaster Preparedness:

This section was adapted from the tool developed by Nermen Abdelfatah Mohamed et al. It included Yes/No questions, with each correct response scored as 1 and incorrect as 0.

**Scoring of Knowledge:**

Adequate Knowledge: >60% (more than 9 correct answers)

Inadequate Knowledge: <60% (up to 9 correct answers)

Cronbach's alpha for the knowledge section in this study was 0.79.

Attitudes toward Disaster Preparedness:

Also adapted from Mohamed et al., this section included 11 Likert scale questions. Agree = 2 points, Unsure = 1 point, Disagree = 0 points.

**Scoring of Attitudes:**

Positive Attitude: ≥60% (13–22 points)

Negative Attitude: <60%

Cronbach's alpha for this section was 0.83.

Practice Regarding Disaster Preparedness:

Adapted from Shaista et al., this section contained six Yes/No questions assessing participation in disaster drills. Yes = 1 point, No = 0 points.

**Scoring of practice:**

Adequate Practice: ≥60% (4–6 correct responses)

Inadequate Practice: ≤3 correct responses

Cronbach's alpha for the practice section was 0.74

**Ethical Consideration:**

Ethical approval was obtained from the Ethical Review Committee of the Bashir Institute of Health Sciences, Islamabad, as well as from the administrations of the participating nursing colleges. All ethical principles were followed during data collection. Informed consent forms were signed by each participant, and confidentiality and anonymity were assured throughout the study.

**Data Collection Procedure:**

The researchers approached students during college hours and briefly explained the purpose of the study. After obtaining informed consent, questionnaires were distributed by trained data collectors. Participants completed the forms independently, and the completed questionnaires were collected on the same day. Confidentiality and anonymity were strictly maintained.

**Data Analysis:**

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 26 (IBMTM Corp., Armonk, USA). Frequencies and percentages were calculated for all variables

## Results

### 4.1 Socio-demographic Profile

Table 1

| Age in years | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 18_20 | 18 | 9.1 | 9.1 | 9.1 |
| | 20_23 | 150 | 76.1 | 76.1 | 85.3 |
| | ≥23 | 29 | 14.7 | 14.7 | 100.0 |
| | Total | 197 | 100.0 | 100.0 | |

Table 1 shows the age distribution of the 197 participants. Eighteen participants (9.1%) were aged 18–20 years, while the majority, 150 participants (76.1%), fell within the 20–22-year age range. Additionally, 29 participants (14.7%) were 23 years or older. Overall, the data indicate that most participants were young adults, with the largest proportion in the 20–22-year category.0

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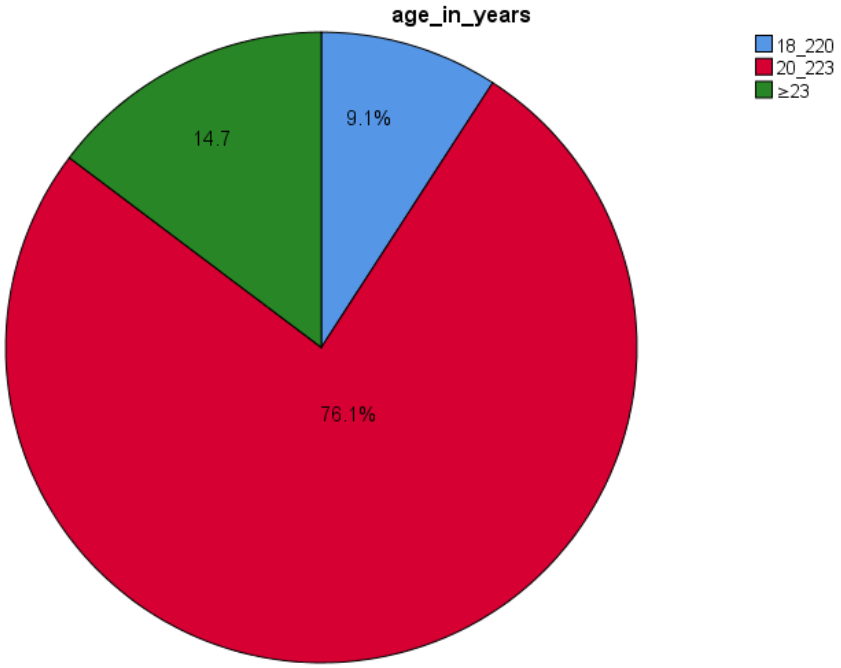


Table 2

| Gender | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Male | 109 | 55.3 | 55.3 | 55.3 |
| | Female | 88 | 44.7 | 44.7 | 100.0 |
| | Total | 197 | 100.0 | 100.0 | |

The table 2 presents data for 197 participants, with 109 males (55.3%) and 88 females (44.7%). This indicates a slightly higher proportion of male respondents, while overall the gender distribution remains relatively islamabad.

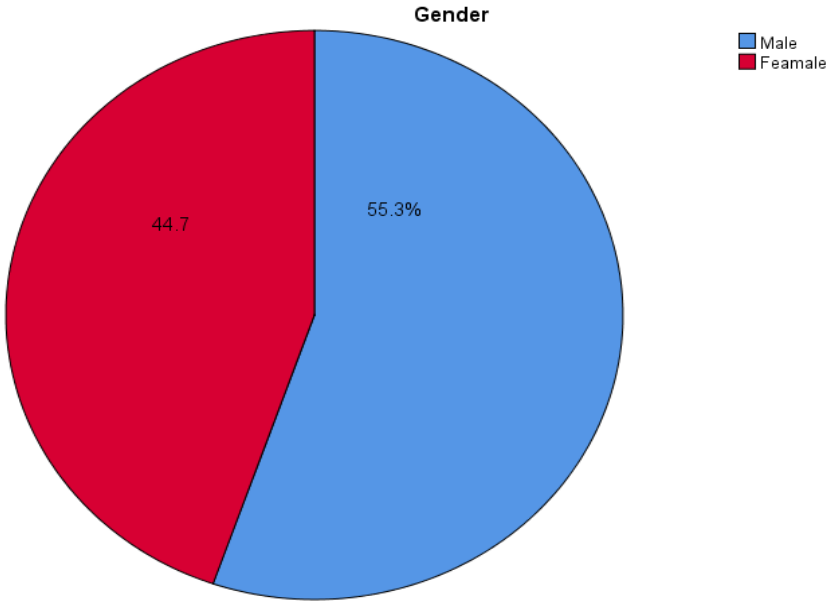

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**Table 3**

| Marital status | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Single | 168 | 85.3 | 85.3 | 85.3 |
| | Married | 24 | 12.2 | 12.2 | 97.5 |
| | Divorced | 5 | 2.5 | 2.5 | 100.0 |
| | Total | 197 | 100.0 | 100.0 | |

The majority of the study participants were single, totaling 168 individuals (85.3%). Only 24 participants (12.2%) reported being married, and 5 participants (2.5%) were divorced. Overall, the sample was largely comprised of single individuals.

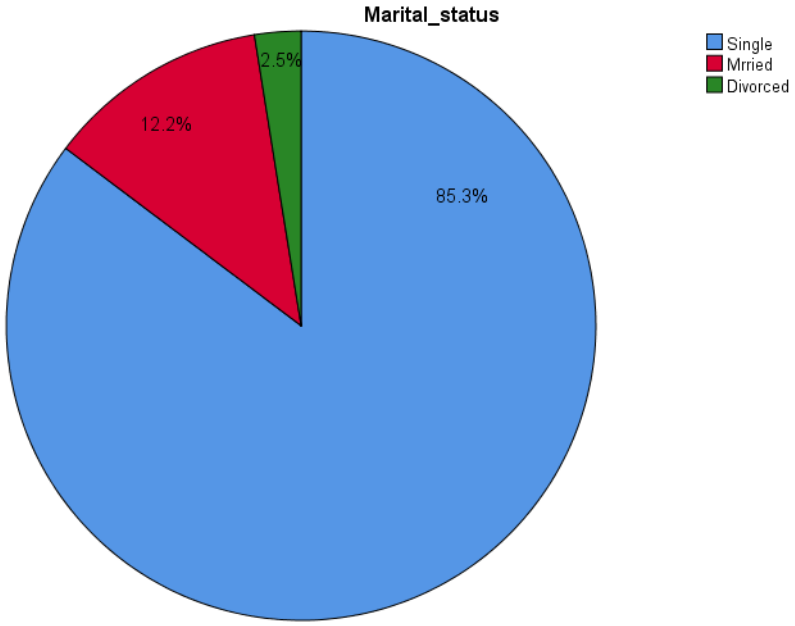

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**Table 4**

| Semester level in BSN program | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Sixth semester | 111 | 56.3 | 56.3 | 56.3 |
| | Eighth semester | 86 | 43.7 | 43.7 | 100.0 |
| | Total | 197 | 100.0 | 100.0 | |

The table indicates that out of 197 participants, the majority (111, 56.3%) were in the sixth semester of the BS Nursing program, whereas 86 participants (43.7%) belonged to the eighth semester. This suggests that while students from both semesters were adequately represented, there was a marginally greater involvement from those in the sixth semester.

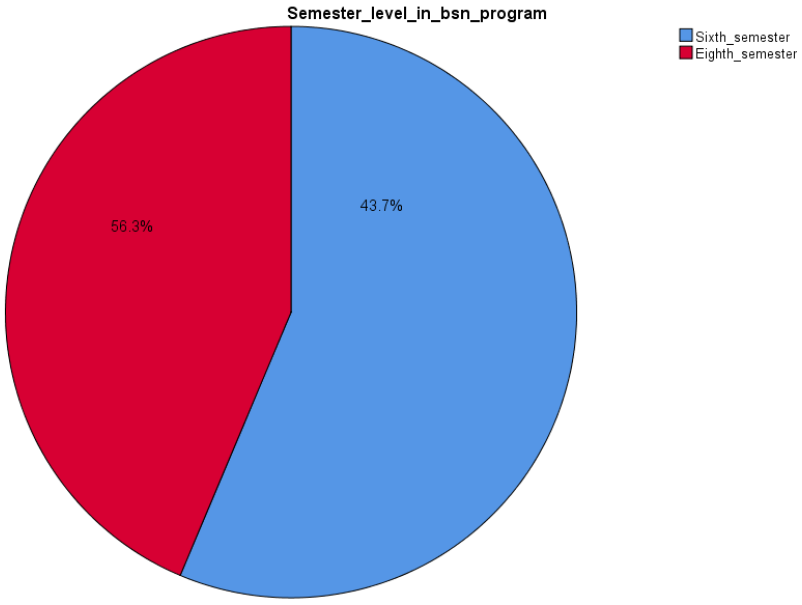


**Table 5**

| Accommodation | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Hostel | 134 | 68.0 | 68.0 | 68.0 |
| | Family | 63 | 32.0 | 32.0 | 100.0 |
| | Total | 197 | 100.0 | 100.0 | |

A fewer percentage of the 197 participants lived with their families (63, 32%), whereas the majority of them (134, 68%) lived in hostels. This indicates that the majority of the study's participants were housed in hostels.

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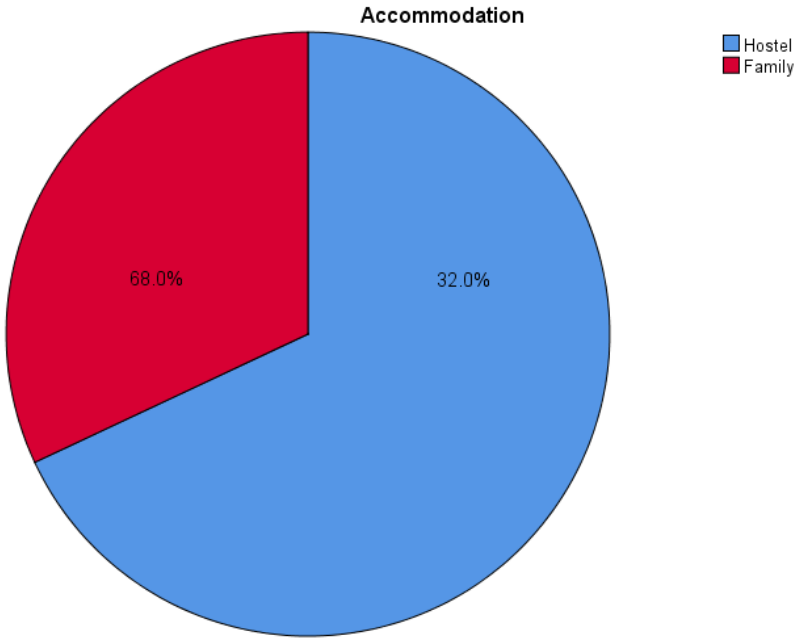
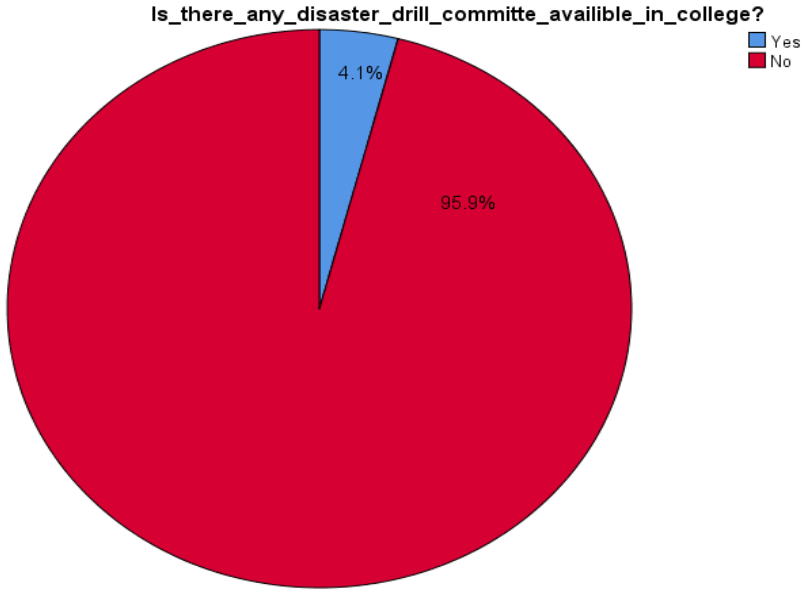



Table 6

| Is there any disaster drill committee available in college? | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Yes | 8 | 4.1 | 4.1 | 4.1 |
| | No | 189 | 95.9 | 95.9 | 100.0 |
| | Total | 197 | 100.0 | 100.0 | |

Out of 197 participants, just 8 (4.1%) stated that their college had a disaster drill committee, whereas 189 (95.9%) reported the absence of one, indicating that most colleges surveyed do not have dedicated disaster preparedness committees.



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**4.2 knowledge items**

**Table 7**

| Knowledge Items | Yes | | No | |
|---|---|---|---|---|
| | No | % | No | % |
| 1. Previously heard about the disaster concept | 179 | 90.9% | 18 | 9.1% |
| 2. Are you aware of where the plan may be found? | 90 | 45.7% | 107 | 54.3% |
| 3. Knew about disaster planning | 119 | 60.4% | 78 | 39.6% |
| 4. Disaster is a mismatch between event-driven needs and the resources that can be met. | 140 | 71.1% | 57 | 28.9% |
| 5. Natural or man-made disasters are both possible. | 171 | 86.8% | 26 | 13.2% |
| 6. His or her city could experience a disaster one day. | 157 | 79.7% | 40 | 20.3 |
| 7. A disaster might one day harm your college. | 146 | 74.1% | 51 | 25.9 |
| 8. Planning of disaster is the process of preparing for catastrophes by determining what would need to be done and how it should be done. | 163 | 82.7% | 34 | 17.3% |
| 9. It is important to identify and address the nearby threats that could most likely result in disaster for his or her college or community. | 168 | 85.8% | 28 | 14.2% |
| 10. Are you familiar with the college's emergency evacuation procedures during disasters? | 89 | 45.2% | 108 | 54.8% |
| 11. Are you aware of any specific exit doors for use during the evacuation? | 107 | 54.3% | 90 | 45.7% |
| 12. Do you know what to do when there is an earthquake? | 160 | 81.2% | 37 | 18.8% |
| 13. Do you know where the safest place to be when a flood is? | 105 | 53.3% | 92 | 46.7% |
| 14. Personnel from the city's health and non-health professions are involved in disaster management. | 145 | 73.6% | 52 | 26.4% |
| 15. Do you know what drills are? | 84 | 42.6% | 113 | 57.4% |
| 16. Do student's members understand their functions during a drill? | 82 | 41.6 | 115 | 58.4% |
| **Knowledge level** | **Adequate** | | 72% | |
| | **Inadequate** | | 28% | |

Among the 197 participants, 179 (90.9%) were familiar with the concept of disasters, while only 18 (9.1%) had no prior knowledge, indicating that most students had some awareness of disaster-related topics. The majority were single (168, 85.3%), with 24 (12.2%) married and 5 (2.5%) divorced. In terms of academic level, 111 participants (56.3%) were in the sixth semester of the BS Nursing program, while 86 (43.7%) were in the eighth semester. Regarding living arrangements, 63 participants (32%) lived with their families, whereas 134 (68%) resided in hostels. Only 8 participants (4.1%) reported that their college had a disaster drill committee, compared to 189 (95.9%) who said none existed, indicating that most colleges lacked committees focused on disaster preparedness. Of the 197 participants, 107 (54.3%) said they were unaware of the location of the disaster's plan, while 90 (45.7%) said they knew. This indicates a lack of awareness of disaster preparedness in the college, as slightly over half of the students did not know where the disaster plan was located.

Among the 197 participants, 119 (60.4%) said they knew something about disaster planning, while 78 (39.6%) said they didn't. This shows that while a

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significant portion of the students were still unaware, most of them were familiar with the idea of disaster planning.

A disaster is a mismatch between event-driven requirements and available resources, according to 140 (71.1%) of the 197 participants, whereas 57 (28.9%) disagreed. This suggests that while almost one-third of students were unable to understand the basic idea of a disaster, the majority of students did.

A disaster is a mismatch between event-driven requirements and available resources, according to 140 (71.1%) of the 197 participants, whereas 57 (28.9%) disagreed. This suggests that while almost one-third of students were unable to understand the basic idea of a disaster, the majority of students did.

Of the 197 participants, 157 (79.7%) believed that a disaster could occur in their city, while 40 (20.3%) disagreed, indicating that most students recognized the potential for local disasters.

Similarly, 146 participants (74.1%) thought that disasters might affect their college, whereas 51 (25.9%) did not, showing awareness of institutional vulnerability.

A majority, 163 (82.7%), understood that disaster planning involves determining necessary actions and procedures, while 34 (17.3%) disagreed, reflecting a good grasp of disaster preparedness concepts.

Furthermore, 169 participants (85.8%) acknowledged the importance of identifying and managing local hazards that could impact their community or college, compared to 28 (14.2%) who did not, highlighting an understanding of risk assessment.

Regarding emergency protocols, 89 participants (45.2%) were aware of their college's evacuation procedures, whereas 108 (54.8%) were not, suggesting the need for improved preparedness training.

Knowledge of emergency exits was slightly higher, with 107 (54.3%) aware and 90 (45.7%) unaware, indicating a moderate level of familiarity.

Most students, 160 (81.2%), knew what to do during an earthquake, while 37 (18.8%) did not, showing reasonably high readiness.

In contrast, only 105 participants (53.3%) knew the safest location during a flood, with 92 (46.7%) unaware, pointing to lower preparedness for flood events.

Regarding disaster management, 145 participants (73.6%) recognized the involvement of both health and non-health city workers, compared to 52 (26.4%) who did not, indicating awareness of collaborative efforts.

However, only 84 participants (42.6%) knew what drills were, while 113 (57.4%) did not, and 82 (41.6%) were aware of their roles during drills, with 115 (58.4%) unclear, demonstrating a need for more practical training and guidance in disaster preparedness exercises.

**4.3 Attitude items**

| Attitude Items | Disagree | | Unsure | | Agree | |
|---|---|---|---|---|---|---|
| | No | % | No | % | No | % |
| 1- I do not require information on disaster planning preparedness. | 115 | 58.4% | 41 | 20.8% | 41 | 20.8% |
| 2- The college administration should be adequately prepared for disasters | 22 | 11.2% | 27 | 13.7% | 148 | 75.1% |
| 3- Disaster planning is for a few personnel in the college | 97 | 49.2% | 59 | 29.9% | 41 | 20.8% |
| 4- Potential disaster-causing risks should be recognized and mitigated. | 24 | 12.2% | 44 | 22.3% | 129 | 65.5% |

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| | | | | | | |
|---|---|---|---|---|---|---|
| 5-Training is necessary for all college personnel. | 16 | 8.1% | 27 | 13.7% | 154 | 78.2% |
| 6- Is it necessary to have a disaster plan? | 21 | 10.7% | 17 | 8.6% | 159 | 80.7% |
| 7- Disaster preparations must be revised frequently. | 23 | 11.7% | 29 | 13.7% | 145 | 73.6% |
| 8- The likelihood of disasters occurring at our college is low. | 40 | 20.3% | 69 | 35.0% | 88 | 44.7% |
| 9- Only nursing staff and physicians need disaster management. | 137 | 69.5% | 29 | 14.7% | 31 | 15.7% |
| 10- The college should hold frequent disaster simulation exercises. | 26 | 13.2% | 46 | 22.85 | 126 | 68.0% |
| 11-Drills should be conducted in the college. | 23 | 11.7% | 51 | 25.9% | 123 | 62.4% |
| Attitude level | Positive | | 75% | | | |
| | Negative | | 25% | | | |

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Among the 197 participants, 115 (58.4%) disagreed that they do not need information on disaster planning, indicating that they value such knowledge, while 41 (20.8%) were unsure and another 41 (20.8%) felt they did not need it.

Most students (148; 75.1%) believed that the college administration should be well-prepared for emergencies, whereas 22 (11.2%) disagreed and 27 (13.7%) were uncertain.

About 97 participants (49.2%) rejected the idea that disaster preparedness is limited to a few employees, suggesting they think it should involve more people; 41 (20.8%) agreed, and 59 (29.9%) were unsure.

Regarding hazard management, 129 participants (65.5%) agreed that potential hazards should be identified and reduced, 24 (12.2%) disagreed, and 44 (22.3%) were uncertain.

Training for all staff was considered essential by 154 participants (78.2%), with 16 (8.1%) disagreeing and 27 (13.7%) undecided.

The necessity of having a disaster plan was acknowledged by 159 participants (80.7%), while 21 (10.7%) disagreed and 17 (8.6%) were unsure.

Regular updates to disaster plans were supported by 145 participants (73.6%), with 23 (11.7%) disagreeing and 29 (14.7%) uncertain.

Concerning perceived disaster risk, 88 participants (44.7%) thought the likelihood was low, 40 (20.3%) disagreed, and 69 (35.0%) were uncertain.

Most participants (137; 69.5%) disagreed that only doctors and nurses need disaster management, suggesting a broader involvement is necessary; 31 (15.7%) agreed, and 29 (14.7%) were unsure.

Regular disaster simulation exercises were recommended by 126 participants (64.0%), 26 (13.2%) disagreed, and 45 (22.8%) were unclear.

Finally, 123 participants (62.4%) supported holding drills at the college, whereas 23 (11.7%) disagreed and 51 (25.9%) were uncertain.

Overall, the findings show that most students recognize the importance of disaster preparedness, training, inclusive planning, and regular drills to improve readiness.

**4.4 practice items**

| **Practice items** | **Yes** | | **No** | |
|---|---|---|---|---|
| | **No** | % | **No** | % |
| Are nursing students actively involved in disaster response teams or committees within the college? | 104 | 52.8% | 92 | 46.7% |
| Have nursing students participated in any previous disaster drills or simulations conducted by the college? | 52 | 26.4% | 145 | 73.6% |
| Is the disaster plan periodically updated? | 69 | 35.0% | 128 | 65.0% |
| Have you received training on how to respond to different types of disasters, such as earthquakes, floods, or fires? | 61 | 31% | 136 | 69% |
| Are you familiar with the specific roles and responsibilities assigned to nursing students during disaster response activities? | 90 | 45.7% | 107 | 54.3% |
| Do you feel confident in your ability to assist in evacuating patients or colleagues during an emergency evacuation? | 124 | 62.9% | 73 | 37.1% |
| **Practice level** | Adequate | | 35% | |

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| | | |
|---|---|---|
| | Inadequate | 65% |

Of the 197 participants, 104 (52.8%) reported that nursing students actively take part in college committees or disaster response teams, while 92 (46.7%) indicated they do not, and 0.5% did not respond. This suggests a moderate level of student involvement in institutional preparedness initiatives.

Among the participants, 52 (26.4%) stated that nursing students had participated in previous disaster drills or simulations, whereas 145 (73.6%) had not, highlighting the limited engagement in practical disaster preparedness activities and the need for broader training opportunities.

Regarding disaster plan updates, 69 participants (35.0%) said the plan is updated regularly, while 128 (65.0%) said it is not, indicating a gap in maintaining current preparedness measures.

When asked about formal disaster training, 61 participants (31.0%) reported having received instruction on responding to events such as fires, floods, and earthquakes, whereas 136 (69.0%) had not, showing that most students lack structured disaster response training.

Additionally, 107 participants (54.3%) said they were unfamiliar with the specific roles assigned to nursing students during disaster response, while 90 (45.7%) were aware, demonstrating a need for clearer guidance and instruction.

Finally, 124 participants (62.9%) expressed confidence in their ability to assist in evacuating patients or colleagues during emergencies, while 73 (37.1%) did not, indicating that despite a majority feeling capable, many students still require practical hands-on training.

**Discussion**

The purpose of this study was to assess the knowledge, attitude, and practice (KAP) of nursing students in public and private nursing colleges in Islamabad regarding disaster preparedness (DP). To the best of our knowledge, this is the first study to evaluate nursing students' readiness for disasters in Islamabad, Pakistan. The findings indicate that although most participants demonstrated inadequate practice, more than two-thirds possessed adequate knowledge and a positive attitude towards disaster preparedness. These results confirm the overall KAP levels among undergraduate nursing students in Islamabad and provide valuable insight for developing educational guidelines aimed at improving disaster readiness.

In our study, the majority of nursing students (72%) demonstrated adequate knowledge of disaster preparedness, whereas 28% showed inadequate knowledge. This indicates that a substantial proportion of students understand the fundamental concepts of responding to emergency situations. A possible explanation is that core nursing courses—such as Community Health Nursing and Critical Care Nursing—introduce students to basic principles of managing risks and emergency scenarios. Exposure to these subjects in theoretical classes and clinical training likely contributed to their knowledge of disaster preparedness.

Similar findings were reported by Izquierdo-Condoy et al. in Latin America and the Caribbean, where over half of medical students demonstrated solid knowledge of disaster preparedness. Likewise, Aurelio et al. found that nursing students at Nueva Ecija University in the Philippines also possessed adequate understanding of DP.

However, our results differ from those reported in an experimental study by Abdel Sattar et al. in Egypt, which revealed that fewer than 20% of nursing students had adequate knowledge prior to an educational intervention. Similarly, a study by Alrazeeni among medical students in Saudi Arabia showed weak to moderate knowledge of disaster preparedness. Research conducted by Mariappan and Philip also found insufficient knowledge among participating students. Additionally, studies in India by Singhal et al. and in Iran by Kaviani et al. identified significant gaps in students' understanding of disaster preparedness and disaster scenarios.

Regarding attitudes, this study found that 75% of the nursing students had a positive attitude towards disaster preparedness, while 25% exhibited a negative attitude. This suggests that most students recognize the importance of being well-prepared for disasters. One possible explanation is that adequate knowledge may increase students'

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confidence, resulting in a more positive attitude. Aurelio et al. similarly observed positive attitudes among nursing students in the Philippines. Mariappan and Philip also reported that most participants displayed favorable attitudes towards disaster preparedness. Conversely, our results contradict those of Abdel Sattar et al., who found that only about 20% of Egyptian nursing students held positive attitudes before receiving educational intervention.

With respect to practice, the present study revealed that 65% of nursing students had inadequate DP-related practice, while only 35% demonstrated adequate practice. This indicates that although some students are involved in disaster-related activities, a considerable number still require more training and hands-on experience. A likely reason is the absence of dedicated disaster drill committees within nursing colleges, resulting in limited exposure to practical drills such as fire or earthquake simulations.

These findings are consistent with those of Alrazeeni in Saudi Arabia, where EMS students rated their disaster preparedness skills as weak to moderate. Similarly, Izquierdo-Condoy et al. reported insufficient practice among medical students in Latin America and the Caribbean, many of whom had not received formal DP training. In contrast, Aurelio et al. found unsatisfactory levels of disaster preparedness practice among nursing students in the Philippines. Our findings also differ from those of Aghazadeh et al. in Iran, where more than two-thirds of participating students were able to effectively manage disaster situations and engage in triage.

Overall, these results highlight the need for structured training and formal courses on disaster preparedness for nursing students. Incorporating DP as a dedicated subject in undergraduate programs and organizing regular disaster drills could significantly improve students' preparedness and response capabilities.

**4.1 Implications of Practice for Future Research**

This study emphasizes the importance of structured education and training in disaster preparedness to strengthen the knowledge and skills of nursing students. Introducing DP as a formal subject in undergraduate nursing curricula and ensuring that institutions establish disaster drill committees can greatly enhance practical readiness. Future research should explore more extensive and comprehensive training strategies to further improve disaster preparedness among nursing students.

**4.2 Limitations of the Study**

This study employed a cross-sectional design, which limits the ability to establish cause-and-effect relationships. Although data were collected from multiple nursing colleges in Islamabad, the findings may not be fully generalizable to nursing colleges across Pakistan. Therefore, future studies should include larger and more diverse samples representing nursing institutions from different regions of the country to obtain higher-level, generalizable evidence

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