Original Article

Knowledge about First Aid among Medical, Nursing and Allied Health Sciences Students of Rawalpindi Medical University, Pakistan

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Abstract

Background: First aid is a critical skill that enables timely intervention in medical emergencies. While medical and nursing students often receive clinical training in hospitals, their preparedness to handle emergencies outside these settings remains uncertain.

Objectives: This study aimed to assess the level of first aid knowledge among undergraduate students enrolled in MBBS, Nursing, and Allied Health Sciences (AHS) programs at Rawalpindi Medical University.

Materials and Methods: A cross-sectional study was conducted from April to August 2023. A self-structured, validated questionnaire comprising 16 items was distributed among students. Participants were awarded 1 point per correct response. Based on total scores, knowledge levels were classified as high (13-16), moderate (8-12), or low (0-7). Data were analyzed using SPSS version 26.

Results: The study included a total of 309 individuals enrolled in the MBBS, AHS, and Nursing programs. The average knowledge score was 8.72 ± 1.87. Only 3.2% had high knowledge, 69.9% had moderate knowledge, and 26.8% had low knowledge. MBBS students (M = 9.02, SD = 1.61) scored significantly higher than AHS (M = 8.0, SD = 2.33) and Nursing (M = 8.06, SD = 2.11) students ($p < 0.001$). A positive correlation was noted between academic year and knowledge score ($r = 0.144$, $p = 0.011$).

Conclusion: The findings highlight the moderate level of first aid knowledge among health sciences students, with disparities between academic programs. This underscores the need for structured, curriculum-based training in first aid across all healthcare disciplines.

Keywords: First Aid, Knowledge, Medical Students, Allied Health Sciences, Nursing.

Introduction

First aid is a vital skill that enables individuals to respond effectively in medical emergencies before professional help arrives. It includes prompt interventions such as bleeding control, CPR, burn management, and airway clearance that can prevent complications and even save lives.

According to the United States Department of Labor, first aid involves "prompt medical care administered immediately after the incident and at the site of occurrence," requiring no specialized equipment.[1] The primary goals of first aid include preserving life, preventing deterioration, and promoting recovery.[2]

Although medical and nursing students are trained in emergency response within clinical settings, their readiness to manage emergencies outside the hospital environment remains questionable. Previous studies have reported varying levels of first aid knowledge among health sciences students, with significant knowledge gaps noted in low- and middle-income countries.[3-5]

In Pakistan, studies assessing first aid knowledge among healthcare students are limited and often focus on a single discipline. Moreover, many students lack hands-on training despite theoretical exposure.[6,7] This highlights a gap in literature regarding multi-disciplinary comparison and practical readiness of students. This study was designed to fill this gap by evaluating and comparing first aid knowledge among students of MBBS, Nursing, and Allied Health Sciences (AHS) at Rawalpindi Medical University. The findings aim to inform policy and guide the integration of structured first aid training into undergraduate curricula.

A 2018 study conducted at the *King Saud University* found that only 68% of the medical students answered the first aid questions correctly. Usually there is no significant difference between students of 1st, 2nd, and 3rd years regarding first aid knowledge, however, final year students exhibit a greater proficiency in their understanding of first aid concepts.[7] Similarly, another study was conducted by *Princess Norah University* in 2019, involving a sample of 1000 female students. The findings of the study revealed that a mere 34.7% of participants exhibited a commendable level of first aid knowledge, while the majority, accounting for 57.5%, possessed a moderate level of knowledge. However, a small proportion of 7.8% demonstrated a deficient understanding of first aid principles.[8,9]

Additionally, a study conducted in 2011 at a medical college in southern India reported that only 11% of students had prior experience in first aid training, with 13% exhibiting a high level of knowledge, 68.4% demonstrating a moderate level, and 17.8% showing a low level of understanding.[5] Moreover, studies in Pakistan have also assessed first aid knowledge among medical and non-medical students. One study conducted in 2010 at six different colleges in Karachi found that only 17.8% of participants had

prior first aid training, and medical students exhibited poor knowledge in this area.[10] Another study was conducted in 2011 comparing the skills of First aid among trained and untrained medical students in Pakistan. It found that the level of first aid knowledge among trained students was less than 50%, which is not satisfactory.[11]

Given the pivotal role that medical and nursing students will play as future healthcare professionals; it is crucial to assess their knowledge of first aid. This survey-based study aims to evaluate participants' understanding of first aid principles, their confidence in applying this knowledge, and their perception of the importance of first aid.

Materials and Methods

This was a cross-sectional questionnaire-based study conducted for a duration of six months i.e. from April 2023 to August 2023. The study participants included 309 undergraduates medical, AHS and nursing students at Rawalpindi Medical University. Ethical approval was obtained from the Ethical Review Board of Rawalpindi Medical University. Written informed consent was taken from all participants prior to data collection. To ensure confidentiality, no identifying information was collected. All responses were anonymized, and the data was stored securely with restricted access, accessible only to the research team.

A self-structured 16 items questionnaire regarding first aid was used to assess the knowledge of the students. For every correct answer, participants were given a score of 1 and for incorrect answers a score of 0. A knowledge score of 13-16 was considered High knowledge, while 8-12 score was considered Moderate knowledge, and 0-7 score was considered Low knowledge. Content validity was ensured through expert review by two senior faculty members. A pilot test was conducted on 20 students to refine the questions for clarity and relevance. Necessary modifications were made before final administration. The sample was selected using convenience sampling. Although no formal power calculation was done, the sample size was deemed adequate based on feasibility. Uneven representation across degree programs and gender was noted and is acknowledged as a potential source of bias. The questionnaire was distributed among the study participants by investigators, and it was collected back on the same day. Data was entered into a Microsoft excel sheet and analysis was done using SPSS version 26. Comparison of means was done by using T test and one way ANOVA.

Results

A total of 309 students from three different degree programs of Rawalpindi Medical University participated in the study. 216 (69.9%) students participated from MBBS, 60 (19.4%) students participated from Allied Health Sciences and 33 (10.7%) students participated from BS Nursing as shown in table 1. Majority of students participated from the fourth year (42.4%). Female population was dominant (76.7 %).

Table 1 *Distribution of Participants from MBBS, AHS, and Nursing programs.*

	Frequency	Percentage
MBBS		
Male	60	19.4
Female	156	50.5
AHS		
Male	50	16.2
Female	10	3.2
Nursing		
Male	31	10
Female	2	0.6

Note. Data presented as frequencies and percentages

Mean knowledge score of all students regarding First Aid was 8.72 ± 1.878. Only 10 (3.23%) students had High knowledge, 216 (69.9%) students had Moderate knowledge, and 83 (26.8%) students had Low knowledge, as shown in Table 2.

Table 2 *Distribution of Students Having High, Moderate, and Low Knowledge Scores.*

Knowledge Score	Frequency	Percentage
High Score	10	3.2
Moderate Score	216	69.9
Low Score	83	26.8

Note. Data presented as frequencies and percentages

An independent samples t-test was conducted to assess the difference in mean knowledge scores between male and female students at RMU. The t-test revealed no statistically significant difference in knowledge scores between male (M = 8.89, SD = 2.11) and female (M=8.67, SD=1.80) students, t(307)=-0.862, p=389. A one-way analysis of variance (ANOVA) with Welch test was applied to examine the differences in mean knowledge scores among students of three degree programs (MBBS, AHS, and Nursing) at RMU, as shown in Table 3.

Table 3 *One-way ANOVA for Comparison of Mean Knowledge Scores of Students from MBBS, AHS, and Nursing.*

Degree Program	Mean ± SD	P-value
MBBS	9.02 ± 1.61	p < 0.001
AHS	8.0 ± 2.33	
Nursing	8.06 ± 2.11	

Note. Data presented as Mean and Standard Deviation.

A statistically significant difference of mean knowledge scores between MBBS, AHS and Nursing students was found, as determined by one way ANOVA, $F(2, 306) = 9.788$, $p < .001$. Post-hoc Tukey HSD tests were conducted to further explore the pairwise comparisons. The results of the Tukey HSD test indicated significant differences in knowledge scores among degree programs. Specifically, MBBS students (M = 9.02, SD = 1.61) had significantly higher knowledge scores compared to AHS students (M = 8.0, SD = 2.33), $p < .001$, and Nursing students (M = 8.06, SD = 2.11), $p = .014$. However, there was no significant difference in knowledge scores between AHS and Nursing students, $p = .987$

A Pearson correlation analysis was conducted to examine the relationship between Academic Year and knowledge scores among students at Rawalpindi Medical University. The correlation analysis revealed a significant positive correlation between Academic Year and knowledge scores ($r = .144$, $p = .011$)

Figure 1 *Bar Chart Showing Mean Knowledge Scores of Students from Various Academic Years of MBB, AHS and Nursing Programs.*

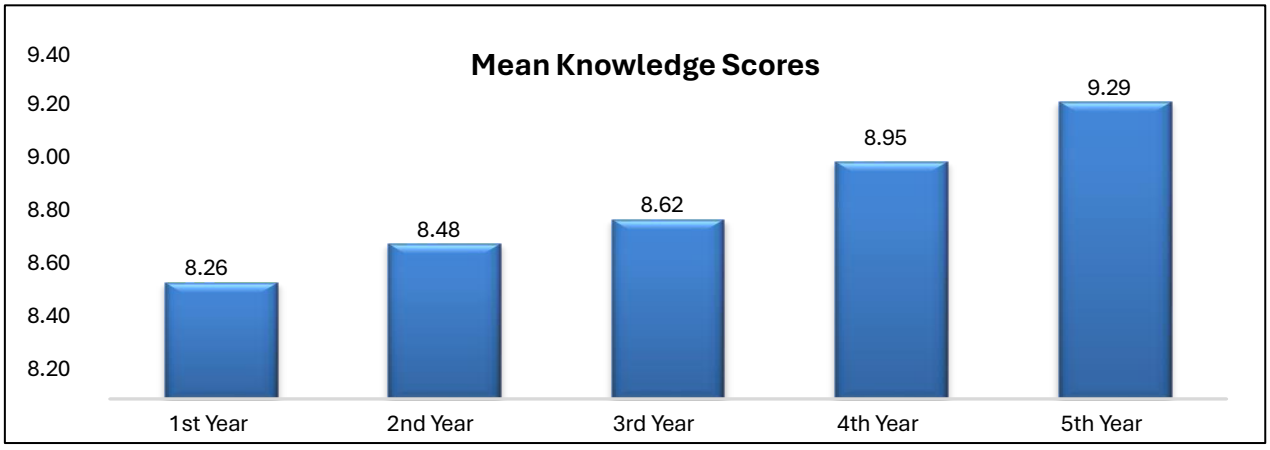

Figure 2 *Bar Chart Showing Percentage of Students with High, Moderate, and Low Knowledge Score.*

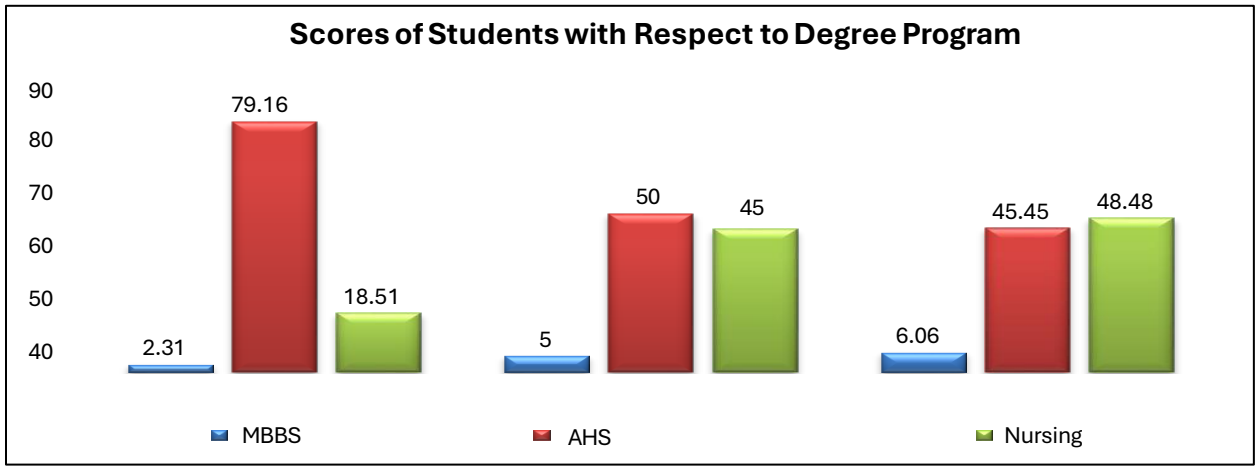

Table 4 *Correct Response of Students from MBBS, AHS, and Nursing.*

Knowledge Question	Correct Answer	MBBS N (%)	AHS N (%)	Nursing N (%)
First step in severe bleeding?	Cover with clean cloth	78 (36.1)	33 (55.0)	9 (27.3)
Correct rate of compressions?	100 compressions per minute	83 (38.4)	29 (48.3)	13 (39.4)
Anaphylactic shock management?	Give water immediately	25 (11.6)	8 (13.3)	9 (27.3)
Depth of chest compressions:	2-3cm	85 (39.3)	31 (51.6)	10 (30.3)
Management of broken arm?	Put an Arm sling	70 (32.4)	22 (36.6)	12 (36.3)
Time to cool a burn with cold water:	5 min	94 (43.5)	21 (35.0)	22 (66.7)
Steps for nose bleeding?	Sit down, lean forward and pinch nose	160 (74.1)	30 (50.0)	22 (66.6)
Help someone choking?	Perform Heimlich maneuver	180 (83.3)	28 (46.6)	12 (36.3)
First aid measures are being given during a seizure?	Individuals moved to safe place and is not restricted	98 (45.37)	23 (38.3)	11 (33.3)

Manage a hypoglycemic attack?	Give sugary drinks	146 (67.6)	33 (55.0)	18 (54.5)
Manage an asthmatic patient?	Make the patient sit comfortably and Nebulize with Bronchodilators	192 (88.9)	41 (23.3)	20 (60.6)
Time to check breathing for unconscious casualty:	Not more than 10 sec	91 (42.1)	27 (45.0)	14 (42.4)
Medical emergency number:	1122	205 (94.9)	54 (90.0)	31 (93.9)
Allergy casualties carry all the time	Adrenaline (EpiPen)	86 (39.8)	22 (36.6)	15 (45.4)
CPR ratio:	30:2	167 (77.3)	37 (61.6)	25 (75.7)
First response to a casualty electric burn?	Break electric source contact	189 (87.5)	41 (68.3)	23 (69.7)

Note. Data presented as frequencies and percentages.

Discussion

The present study aimed to investigate the knowledge of first aid among students from various degree programs at Rawalpindi Medical University. The findings shed light on several key aspects of first aid knowledge within this student population.

The study included a total of 309 students from three distinct degree programs: MBBS, Allied Health Sciences (AHS), and BS Nursing. MBBS students constituted the largest portion of the sample, with the majority of students being in their fourth year of study. A notable gender disparity was observed, with a higher representation of females.

The majority of students had an average score regarding first aid knowledge. The study identified significant differences in knowledge scores among students of different degree programs. MBBS students demonstrated significantly higher knowledge scores compared to AHS and Nursing students. This discrepancy might be attributed to variations in curriculum emphasis, clinical exposure, or training methods across these programs. The findings underscore the importance of addressing these disparities to ensure that students across all degree programs acquire essential first aid knowledge.

Interestingly, the study found no significant difference in knowledge scores between male and female students. This suggests that, within the context of this study, gender did not influence the level of first aid knowledge. This finding is encouraging, as it indicates that both male and female students have an equal opportunity to acquire first aid knowledge.

The study revealed a positive correlation between academic year and knowledge scores. As students progressed through their academic years, their knowledge of first aid skills tended to improve. This finding suggests a cumulative effect of educational experiences over time in enhancing their understanding of first aid concepts.

The study also explored students' attitudes towards first aid training. It was observed that a substantial portion of students lacked confidence in providing first aid, potentially due to a lack of prior training. However, a majority of students expressed a strong desire to include first aid training in their undergraduate curriculum, highlighting the importance of such education. Furthermore, a significant number of students expressed their willingness to take action, such as calling emergency services or performing CPR, when encountering an unconscious and non-breathing adult.

A notable strength of this study is its inclusion of students across three academic programs, allowing for inter-group comparisons. However, several limitations must be acknowledged; the use of convenience sampling, gender imbalance, and the absence of a formal sample size calculation may affect generalizability. The use of a self-structured questionnaire, while validated, may also introduce variability in interpretation.

To enhance first aid proficiency among healthcare students, it is recommended that formal instruction be integrated into undergraduate curricula across all disciplines, supported by mandatory annual hands-on workshops. Incorporating simulation-based training and peer-led teaching methods can further boost learners' confidence and knowledge retention. Additionally, future research should assess how such education influences real-world preparedness and clinical behavior.

Conclusion

This study highlights a moderate level of first aid knowledge among undergraduate healthcare students, with significant variation across academic disciplines. The findings underscore the need for standardized and practical first aid training across all healthcare programs, not just MBBS.

Integrating structured first aid modules and practical workshops into the undergraduate curriculum can bridge current knowledge gaps and ensure that all future healthcare professionals are equipped to respond effectively in emergency situations—both within and beyond hospital settings. Educational reforms that emphasize skill-based learning, simulation practice, and community engagement are essential not only for student competency but also for strengthening public health responsiveness in Pakistan.

Future studies should focus on assessing the long-term impact of such training on students' performance in real-world emergencies and exploring scalable models for nationwide implementation.

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