



Attitudes of Healthcare Students Towards Interprofessional Education

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ABSTRACT

Objective: Interprofessional education (IPE) is increasingly recognized as crucial for effective healthcare delivery. This study aimed to assess the perceptions of medical and nursing students in Pakistan using the Interprofessional Attitude Scale (IPAS).

Methods: A cross-sectional survey was conducted across various medical and nursing institutions in Pakistan. A total of 465 students (65% medical, 35% nursing) completed the 27-item IPAS questionnaire, which was administered online. Demographic data and previous healthcare experience were also collected. The tool was validated by 5 experts and piloted on 20 students before the study. Differences in IPAS scores based on program type (medical vs. nursing), gender, and training phase (pre-clinical vs. clinical) were analyzed using two-way ANOVA and independent samples t-tests. A p-value of less than 0.05 was considered significant.

Results: Nursing students scored significantly higher on the "Patient-Centeredness" subscale, while medical students scored higher on the "Roles and Responsibilities" subscale. Female students, especially in the nursing cohort, exhibited more positive attitudes toward IPE ($p = 0.009$). Significantly higher scores were noted in pre-clinical students compared to those in clinical years ($p = 0.013$), suggesting positively influenced attitudes because of early exposure.

Conclusion: Healthcare students in Pakistan generally exhibit positive attitudes towards interprofessional education (IPE). Significant variations were observed based on the type of academic program, gender, and level of training. Integrating IPE early in healthcare education programs can enhance collaborative abilities and prepare students for multidisciplinary cooperation. Future research should explore the long-term impacts of IPE and address barriers to its effective implementation.

Keywords: Collaboration; Dental; Medical; Nursing; Patient

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Introduction

Interprofessional education (IPE) is promoted by the World Health Organization (WHO), where collaboration between students from various healthcare professions is encouraged to amplify communication and cooperation skills

needed for patient care. According to research, patient outcomes such as safety, medication management efficiency, and shortened hospital stays are boosted by working on this paradigm.¹

The necessary competencies for interprofessional practice are defined by the



Interprofessional Education Collaborative (IPEC) in four domains: roles and responsibilities, interpersonal communication, ethics and values, and teamwork.² These domains serve as a framework to guide educational institutions in preparing healthcare students to collaborate effectively across disciplines. By understanding roles and responsibilities, students can appreciate the unique contributions of each profession to patient care.³ Interpersonal communication fosters clear and respectful dialogue among team members, while ethics and values ensure shared principles that prioritize patient well-being.⁴ Teamwork competencies enable seamless integration of efforts, promoting a cohesive approach to complex healthcare challenges.⁵

Incorporating IPE into healthcare education presents problems too, despite the benefits. Differences in curriculum, conflicts in scheduling, and logistical restrictions often hinder methodical application across many disciplines in healthcare.¹ Even though, there is an increasing trend of integrating IPE promptly into undergraduate programs, issues concerning the organization and optimum time for these projects arise too.

Students' readiness and attitudes toward interprofessional education (IPE) can be assessed through various tools designed to evaluate the competencies, attitudes, and skills necessary for effective collaboration. Prominent instruments include the TEAMSTEPS Framework, which utilizes behavioral markers to assess team dynamics, and the Collaborative Practice Assessment Tool (CPAT), which evaluates multiple domains of teamwork.^{6, 7} The Readiness for Interprofessional Learning Scale (RIPLS), comprising 19 items, is widely used to measure students' preparedness and perceptions of interprofessional collaboration.⁸ Observer-based tools, such as those for assessing case-based collaborations, offer robust intra- and inter-rater reliability. While tools like the IPEC Competency Framework and pharmacy-specific assessments address profession-specific competencies, many existing tools fall short of capturing all four IPEC domains comprehensively. To bridge this gap, the Interprofessional Attitudes Scale (IPAS), established in 2015, incorporates all four IPEC dimensions—roles and responsibilities, communication, ethics and values, and teamwork. IPAS has been validated across diverse international contexts, making it a reliable instrument for assessing attitudes toward IPE.⁹

Given the growing recognition of interprofessional education (IPE) as a vital component of healthcare training, this study aims to address the gaps in understanding how IPE is perceived and its optimal integration into healthcare curricula. The specific goals of this study are to evaluate and compare the interprofessional attitudes among nursing and medical students at different levels of school years. By examining the attitudes of nursing and medical students at varying levels of their education, the research seeks to provide insights into the timeliness, value, and perceived efficiency of IPE initiatives. The findings will inform strategies for the effective implementation of IPE, ultimately fostering stronger interprofessional collaboration and improving patient care outcomes.

Materials and Methods

Study Design

Perspectives on IPE among nursing and medical students in Pakistan were analyzed by using a cross-sectional quantitative methodology, with the Interprofessional Attitudes Scale (IPAS) serving as an authenticated tool for calculating attitudes across all four IPEC areas. English was used as a medium to conduct the survey and it was delivered to numerous healthcare facilities across Pakistan.

Participants

The participants were recruited via a stratified non-probability sampling technique. This study included undergraduate nursing and medical students registered in their programs for the academic year 2023-2024. Eligibility was extended to include pre-clinical (first and second years) and clinical students (third and fourth years) at nursing and medical schools. A minimum sample size of 500 students was selected to ensure representation from all academic levels. Recruitment was carried out by official email invites and promotions in academic venues.

Data Collection

Data collection occurred from February to May 2024 using an online version of the IPAS survey, created on Google Forms. The questionnaire comprised two parts. The first part

provided brief information about the study assured anonymity and included a question seeking informed consent. Participants were then asked for demographic details, including age, gender (male/female), field of specialization (medicine/nursing), year of study, and prior knowledge of IPE. The second part featured a 27-item questionnaire. The questionnaire was divided into 3 validated domains; Teamwork, roles, and responsibilities consisted of 9 items, Patient-centeredness consisted of 8 items, and Healthcare Provision consisted of 8 items respectively. Validated by five subject matter experts and piloted with 20 undergraduate students, the questionnaire ensured clarity and reliability before distribution. The survey link was shared through institutional communication channels and remained open for eight weeks, with two follow-up emails sent to boost participation. Responses were recorded on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

Ethical Considerations

The survey was obtained after getting informed consent from all participants. Details about the study's purpose, confidentiality measures, and the voluntary nature of participation were included in the consent form. Participants were assigned unique ID codes, and no identifying information was collected to maintain anonymity. The Institutional Review Boards (IRBs) of participating institutions following the Declaration of Helsinki provided ethical approval (IRB/NMC/2024/fb-258).

Data Analysis

The demographic characteristics and IPAS scores of participants were summarized using descriptive statistics. The overall IPAS scale and its subdomains were formed after the calculation of Mean and standard deviation. Differences in attitudes between nursing and medical students, as well as between pre-clinical and clinical groups were explored using a two-way analysis of variance (ANOVA). Mean IPAS scores based on gender and previous IPE exposure were compared by conducting independent t-tests. For validity and reliability, the internal consistency of the IPAS tool within this population was determined by calculating Cronbach's alpha, with a threshold of 0.7 indicating acceptable reliability. SPSS version

28 (IBM, New York, USA) was used to carry out all statistical analyses. $P < 0.05$ was set as the significance level.

Results

Quantitative Analysis

The study had a total of 465 students as participants, with a final analysis including 35% nursing students and 65% medical students. The survey response rate was 57%. The final count of 465 complete responses for analysis was gathered after the exclusion of incomplete questionnaires ($n = 50$).

Demographic Characteristics

The demographic information of the participants is presented in Table 1. Previous experience in healthcare settings was reported by approximately 48% of the students, and about 60% of the medical students reported it in their clinical years. Both nursing and medical students had similar age distributions, with most students aged between 20-25 years.

Interprofessional Attitude Scale Scores

The mean scores for each of the 27 items on the IPAS are represented domain-wise in Table 2. Medical students scored higher on the "Roles and Responsibilities" subscale while nursing students scored significantly higher on the "Patient-Centeredness" subscale. A statistically significant effect of the program (medical vs. nursing) was indicated by a two-way ANOVA on overall IPAS scores ($F(1, 463) = 6.983, p = 0.009$), with a higher mean score shown by the nursing students overall. There was also a significant interaction between gender and program type ($F(1, 463) = 4.537, p = 0.034$), indicating that female students, particularly nursing students, had more positive attitudes towards IPE. Prior healthcare experience or family background in healthcare showed no statistically significant difference, suggesting these factors did not influence attitudes toward IPE.

Comparison Between Pre-Clinical and Clinical Years

A statistically significant difference in IPAS scores



($p = 0.013$) was shown in an independent samples t-test comparing students in pre-clinical (Years 1-2) and clinical (Years 3-4). Higher scores were

demonstrated by pre-clinical students, particularly in the "Teamwork and Collaboration" domain.

Table 1: Demographic Characteristics of Participants

Field of study	1 st year	2 nd year	3 rd year	4 th year	Final year	Total N=465
Medical	52	64	51	76	59	302
Nursing	33	34	46	50		163
Gender						
Male	34	37	34	47	30	182
Female	51	61	63	79	29	283
Age Mean \pm SD	19 \pm 2	20 \pm 2	21 \pm 2	22 \pm 2	23 \pm 2	
Previous IPE interventions						
None	61	73	69	92	41	336
≤ 2 courses	21	22	23	22	10	98
≥ 2 courses	3	6	5	9	8	31

Table 2: Overall Scores for Individual IPAS Domains

Domain	Medical Students mean (SD)	Nursing Students mean (SD)	<i>p</i> -value
Patient-centeredness	2.8 (3.5)	3.9 (2.7)	0.002*
Teamwork, roles and responsibilities	4.2 (2.8)	2.9 (3.1)	0.009*
Healthcare Provision	3.9 (2.8)	3.7 (1.5)	0.14

*denotes statistically significant value

Discussion

This study explored the perceptions of medical and nursing students in Pakistan regarding interprofessional education (IPE), revealing generally positive attitudes across both groups. Nursing students demonstrated a higher appreciation for patient-centeredness in IPE, while medical students placed greater emphasis on teamwork and professional responsibilities. These findings align with global trends, reflecting the differing training paradigms of the two professions.¹⁰ While medical education primarily focuses on diagnostic and therapeutic responsibilities, nursing education emphasizes holistic patient care. These distinctions underscore the importance of tailoring IPE programs to accommodate and integrate the strengths of each profession. The higher scores on "roles and responsibilities" among medical students

are likely due to the structured, hierarchical nature of medical education, the emphasis on professional identity and clinical roles, and the curriculum's focus on diagnostic and therapeutic responsibilities.¹⁰ This finding is consistent with existing literature, which suggests that the educational environment and professional training significantly influence students' perceptions of their roles in collaborative healthcare settings.¹¹

Female students scored higher on the IPAS scale, reflecting more positive attitudes toward collaborative learning and teamwork. This aligns with previous studies suggesting that women often exhibit stronger preferences for cooperative and inclusive learning environments.⁸ In Pakistan, evolving cultural and educational dynamics promoting gender equality in healthcare may contribute to these findings.¹² The higher score of Pakistani female students on the IPAS scale can be

attributed to a combination of intrinsic factors such as stronger communication and teamwork skills, cultural socialization towards empathy and collaboration, and the evolving gender roles in education and healthcare. These factors align with global research findings that indicate women generally have more positive attitudes toward interprofessional collaboration.¹² Future research should investigate whether these attitudes persist as students transition into professional roles, providing insights into the long-term impact of gender on interprofessional collaboration.

The results also highlighted the influence of pre-clinical versus clinical training on students' attitudes toward IPE. Pre-clinical students exhibited more positive perceptions, likely due to earlier exposure to IPE concepts before the solidification of professional identities. Conversely, a decline in collaborative attitudes was observed among clinical students, potentially due to the increasing emphasis on role-specific responsibilities during advanced training. The higher scores on the IPAS scale among preclinical students in Pakistan can be attributed to their relative openness to IPE concepts, less defined professional identities, and a broader, more collaborative approach to learning.¹³ As students progress into clinical years, their exposure to specialized training, increased responsibilities, and hierarchical professional structures may shift their focus away from collaboration and towards individual roles, resulting in lower scores on the interprofessional attitudes scale.^{14, 15}

These findings support the need for integrating IPE early in healthcare curricula to establish a foundation for interprofessional collaboration and mitigate the development of role-specific biases.

Despite the positive attitudes toward IPE, students expressed concerns about practical implementation. Barriers such as rigid curriculum structures, limited opportunities for interprofessional interaction, and insufficient faculty support were noted. These challenges are consistent with global studies on IPE, emphasizing the need for institutional strategies to overcome these obstacles. Addressing these barriers through flexible curricula, structured faculty development programs, and enhanced institutional backing can significantly improve the effectiveness and sustainability of IPE initiatives in Pakistan.

The study also highlighted the social and networking benefits of IPE. Students valued opportunities to interact with peers from other professions, fostering mutual respect and understanding. These interactions align with social learning theory, which posits that shared authentic

experiences promote meaningful professional relationships. Strengthening the social aspect of IPE could further enhance collaborative competencies and prepare students for teamwork in their future careers.

This study's strengths include the use of a validated instrument (IPAS) and a diverse sample of medical and nursing students, providing robust insights into interprofessional attitudes. However, limitations include the reliance on self-reported data, which may introduce bias, and the lack of longitudinal follow-up to assess changes in perceptions over time. Future studies should employ mixed-method approaches, include diverse healthcare disciplines, and explore the long-term impact of IPE on professional collaboration and patient outcomes.

In summary, the findings underscore the importance of integrating IPE into healthcare education early in the curriculum to foster collaborative competencies and improve patient-centered care. Addressing implementation barriers and leveraging the social benefits of IPE will be critical for developing sustainable and effective interprofessional programs in Pakistan. These efforts will contribute to preparing healthcare professionals for the multidisciplinary challenges of modern healthcare systems.

Conclusion

The importance of early and structured implementation of IPE programs is emphasized in this study to build collaborative attitudes among healthcare students in Pakistan. Challenges remain in terms of practical application and institutional support, despite positive perceptions. The long-term effects of IPE on professional practice should be the focus of future studies and they should explore ways to optimize these educational strategies within the unique structural and cultural context of healthcare education in Pakistan.

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Author Contribution

AA conceived the idea, collected data, and wrote the initial manuscript. SH and MAAK collected data, analyzed the data, validated the results, and all authors proofread the finalized manuscript.

Data Availability Statement

All relevant data are within the manuscript. Additional data supporting this study are available from the corresponding author upon reasonable request.

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Conflict of Interest

The authors have no conflicts of interest to declare.

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