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Role play versus video-based learning for interprofessional communication and teamwork skills in nursing and medical students: a mixed-methods study in Pakistan

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Abstract

Background Effective interprofessional communication (IPC) is crucial for patient safety. However, IPC training is often insufficient in medical and nursing education in Pakistan. This study compares the effectiveness of Video-Based Learning (VBL) and Role Play (RP) in enhancing IPC and teamwork skills among undergraduate medical and nursing students.

Methods A mixed-method approach encompassed a quasi-experimental design with focused group discussions. 64 participants were randomly divided into two groups ($n=32$ each), each receiving training through either VBL or RP. The study employed the Communication and Teamwork Skills (CATS) assessment instrument utilized by two independent raters to evaluate improvements in coordination, situational awareness, cooperation, and communication skills before and after the interventions. Additionally, focus group discussions provided qualitative insights regarding the teaching strategies.

Results Both RP and VBL significantly improved IPC and teamwork skills compared to baseline. RP showed greater enhancements across coordination, cooperation, and situational awareness compared to VBL. ($p<0.001$). In the VBL group, significant improvements were observed in coordination (pre: 5.46 ± 1.93, post: 7.90 ± 2.50, $p<0.001$), situational awareness (pre: 2.62 ± 1.07, post: 3.68 ± 1.78, $p=0.006$), and communication (pre: 4.75 ± 3.57, post: 11.28 ± 3.72, $p<0.001$), but not in cooperation (pre: 7.06 ± 3.24, post: 8.21 ± 2.57, $p=0.119$). The RP group showed significant improvements in coordination (pre: 6.28 ± 2.58, post: 12.40 ± 2.62, $p<0.001$), situational awareness (pre: 3.06 ± 2.21, post: 5.65 ± 1.51, $p<0.001$), cooperation (pre: 8.09 ± 4.07, post: 13.46 ± 3.58, $p<0.001$), and communication (pre: 4.25 ± 4.22, post: 13.15 ± 6.33, $p<0.001$). Qualitatively, both methods were perceived as engaging and interactive, with the hands-on component in RP regarded by the participants as very valuable to actively practice their skills in a simulated environment.

Conclusions RP significantly outperforms VBL in enhancing IPC and teamwork skills, making it a superior tool for healthcare education. The findings suggest that RP's practical, interactive nature makes it a more effective tool for teaching IPC and teamwork in medical and nursing education. Integrating RP activities into the curriculum could

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enhance communication and teamwork skills among students. Evaluating the longitudinal impact of this integration on patient care could be an area for future research.

Keywords Medical education, Nursing education, Communication skills, Interprofessional skills, Teamwork

Background

Interprofessional communication (IPC) is defined by the World Health Organization (WHO) as any activity involving two or more disciplines, occurring through synchronous methods such as real-time interactions or asynchronous methods like written exchanges [1]. Effective communication extends beyond verbal and written factors, encompassing body language, attitude, and tone of voice [2]. Effective IPC is crucial for ensuring optimal patient outcomes and safety in healthcare settings. Differences in communication styles between physicians, nurses, and other healthcare professionals can lead to specific challenges in sharing patient information and collaborating effectively [3, 4]. Poor communication has been extensively linked to delayed treatment, misdiagnosis, medication errors, patient injury, and even mortality [5]. Recognizing this, various organizations have emphasized the need for interprofessional training and other educational improvements [6, 7]. However, despite the increasing recognition of the importance of interprofessional education and patient safety training, educational institutions have not fully kept pace with developments in the science of patient safety [8].

In Pakistan, the need for improving IPC skills in healthcare education is particularly pressing. Despite the emphasis by the Pakistan Medical Commission (PMC) on teaching communication skills to healthcare professionals, many educational programs still lack structured IPC training [9]. As a result, the Medical Education Department at out institute was tasked with investigating whether an educational intervention could provide a root cause solution to this issue.

Role play (RP) is a powerful pedagogical technique that involves students taking on specific roles and acting out scenarios to learn communication and other course content [10]. Studies have demonstrated the effectiveness of RP in promoting critical thinking, enhancing communication skills, and providing students with experiential learning opportunities in a safe and controlled environment [11, 12]. RP has been shown to improve teamwork and IPC in settings such as prescription communication [11], acute critical care training [13], and medication administration [14]. Prior research has highlighted RP's flexibility and cost-effectiveness compared to other experiential methods, such as simulated patients [15]. However, while these studies focus on individual communication skills, they do not address RP's impact on interprofessional teamwork [16, 17].

Video-based learning (VBL) is part of simulated education, where learners are presented with realistic and complex cases or scenarios that challenge them to analyze the case, identify critical issues, and apply their knowledge and problem-solving skills [18, 19]. VBL has been noted for its structured and visual approach to teaching communication skills, though its comparative effectiveness with RP in interprofessional settings remains underexplored [15].

Given the critical importance of IPC in patient safety, our study aimed to teach IPC and teamwork skills to undergraduate medical and nursing students, and to determine the effectiveness of RP versus VBL as teaching strategies for these essential skills. Additionally, we aimed to explore the experiences of medical and nursing students regarding the use of RP versus VBL as teaching and learning strategies for IPC and teamwork skills.

Methods

This study employed a mixed-method approach, utilizing a concurrent design to compare the effectiveness of RP versus VBL for teaching IPC and teamwork skills. The study was conducted in two steps: a quasi-experiemental design of both pedagogical techniques and focused group discussions (FGDs) to further explore the participants' experiences of the teaching formats. The study was conducted at a medical college and nursing school of a tertiary care hospital in Karachi, Pakistan. The duration of the study was six months, from October 2023 to March 2024. Ethical approval was sought and obtained from our institutions' ethical review committees (Reference numbers: Ref.No.IRB/M-000072/23 and AKU ERC 2023–9153–26758) prior to the initiation of the study.

The study included medical and nursing students at our institution that participated in the IPC and teamwork skills teaching sessions. Students were invited to participate via their respective class representatives, notice boards, and verbal announcements during scheduled classes. All medical students as well as all nursing students enrolled at our institution who participated in the training sessions were included in the study, while those that did not consent to participation were excluded.

Quantitative component

For the quantitiave component of the study, participants were randomly assigned to one of two groups: the VBL group and the RP group. Participants in each intervention group were further divided into smaller groups of 5 to 6 members and the respective interventions were implemented among each subgroup. Prior to the training interventions, the particpants in each group were required to participate in a case scenario which involved a prompt of a medical situation and a task that was required to be performed as a team – each performance of the simulated case scenario by each subgroup within the 2 intervention groups was observed by two raters who scored the performances according to the adapted Communication and Teamwork Skills (CATS) tool [20]. The tool includes four domains with 18 observable behavior items rated on a 5-point Likert scale. Initial ratings of the performances was noted as the participants' baseline competence as per the CATS assessment tool. After the training interventions, participants were presented with a new case scenario with prompt, and were required to enact the simulated situation, which was once again scored by the raters. These ratings were considered the post-intervention ratings of the participants. During the rating process, it was ensured that the raters were blinded to which group (RP or VBL) the participants belonged to as well as whether the performing participants had undergone their respective intervention or not. Informed written consent was obtained from all participants prior to initiation of the intervention.

Training interventions

VBL

The instructor utilized VBL and structured reflection to teach IPC and teamwork skills. Participants were subdivided into five subgroups (5–7 students each) to facilitate small-group discussions and peer-to-peer interaction. 5 cases were presented to the participants in a video format, including the topics such as "A patient with dyspnea and chest pain", "A patient with a history of gastrointestinal bleeding", and "A patient abdominal pain following bariatric surgery". The videos were selected after a thorough review and search of pre-existing freely available online professional teaching videos on medical communication, and videos developed by the Agency for Healthcare Research and Quality (AHRQ) [21]. Each video described the given situation, provided a brief background to the case, and subsequently demonstrated a team of healthcare professionals assessing the situation and performing relevant actions to cater to and resolve the given condition. The individuals in each video were shown to exhibit effective interpersonal communication and teamwork skills to effectively resolve the situation. Within each small group, participants were encouraged to discuss the actions taken by the performers in the video, evaluate their communication and teamwork strategies, and reflect on how similar approaches could be applied in real-world scenarios. These discussions fostered critical thinking and peer learning, allowing participants to identify strengths and gaps in the demonstrated behaviors.

Following the small-group discussions, large-group sessions were conducted to bring all participants together. In these sessions, facilitators led reflective discussions, inviting representatives from each subgroup to share their observations and insights. The facilitators encouraged cross-group comparisons of key communication and teamwork strategies, ensuring that all participants could learn from the collective reflections.

RP

Participants in this group were taught using role plays. They were divided into five subgroups (5–7 students each), with each group provided a case scenario detailing the roles of each healthcare professional and the patient. During the small-group sessions, participants collaborated to prepare and practice their role plays, actively engaging in scenario planning and role-based communication. A prepation time of 60 min was allocated to all the groups to prepare and practice their scenarios, during which a facilitator was present to address any queries or concerns from the participants. The cases utilized in role plays were the same as those demonstrated as videos in the VBL group. Following preparation, each group performed their scenarios and large-group sessions were held where all participants, including performers and observers, were engaged in a comprehensive debriefing and feedback session. The instructor facilitated these discussions, prompting participants to explore the attributes of effective communication and teamwork demonstrated in each role play. The large-group setting enabled cross-group sharing of experiences, broader discussions of challenges encountered, and collective brainstorming of strategies to improve communication and teamwork in similar scenarios.

Raters and training

Particpants of each training group were assessed by two raters, one each from nursing and one from medical faculty with more than 3 years of teaching experience, who were not part of the research team and had volunteered their time and service for our study. The raters underwent a one-day training and briefing about the CATS tool and its implementation and methodology, as well as a practice session with non-participants of workshops to

make better understanding of the tool's implementation, and discuss any queries or confusions. During the study, the two raters independently assessed each team's performance and scored separately on the CATS tool, and did not discuss any of the performed scenarios amongst each other.

Qualitative component

For the focused group discussions (FGDs), purposive sampling was employed to select a diverse cohort of participants, ensuring representation across genders and academic backgrounds. Six students from each group (RP and VBL) were selected and informed written consent was obtained for the focus group discussions. Two separate FGDs were conducted, each with participants of the RP group and the VBL group. The interview guide with questions and probes which was developed for the FGDs can be found as Supplementary Material 1. The discussions were recorded and transcribed verbatim, focusing on predetermined questions and their probes, and each discussion was continued until thematic saturation was observed to be achieved during the course of the FGDs.

Data analysis

Quantitative data were analyzed using Statistical Package for Social Sciences (SPSS) version 25.0 [22]. Continuous data are presented as means with standard deviations while categorical data as frequencies with percentages. The pre- and post-intervention ratings within each intervention group were compared using paired t-tests while scores compared between the two groups were analyzed using independent sample t-tests. A p value of less than 0.05 was considered statistically significant.

Qualitative data was transcribed verbatim and underwent manual content analysis using the Braun and Clarke Thematic Analysis framework, which involves using Familiarizing, Coding, Creating Themes, Review, defining themes, and writing thematic analysis [23]. Two investigatos of the research team independently analysed the qualitative data.

Clinical trial number

Not applicable.

Results

Quantitative results

A total of 64 students (32 medical and 32 nursing students) participated in the study, including 34 males (53.1%) and 30 females (46.9%). The participants were equally divided into the RP and VBL group, with 32 students in each group, and it was ensured that both groups comprised of equal numbers of medical and nursing students (16 medical and 16 nursing students in each group) (Table 1).

Table 1 Demographic data of the participants ($n=64$)

Variable	Group		Total
	RP ($n=32$)	VBL ($n=32$)	
Gender			
Male	15 (46.9)	19 (59.4)	34 (53.1)
Female	17 (53.1)	13 (40.6)	30 (46.9)
School			
Medical students	16 (50.0)	16 (50.0)	32 (50.0)
Nursing students	16 (50.0)	16 (50.0)	32 (50.0)

Prior to initiation of the training interventions, participants in both groups were tasked to participate in a given case-scenario to assess their competence interprofessional skills and teamwork abilites at baseline as per the CATS assessment tool. It was found that participants in both groups demonstrated similar ratings across all domains of the tool, with no significant differences in coordination (VBL: 5.46 ± 1.93, RP: 6.28 ± 2.58, $p=0.168$), situational awareness (VBL: 2.62 ± 1.07, RP: 3.06 ± 2.21, $p=0.33$), cooperation (VBL: 7.06 ± 3.24, RP: 8.09 ± 4.07, $p=0.282$), or communication (VBL: 4.75 ± 3.57, RP: 4.25 ± 4.22, $p=0.622$) (Fig. 1).

After completion of the training sessions for both VBL and RP groups, students in each group were required to enact a new case-scenario which was observed and evaluated by the raters. The results revealed that both pedagogical interventions led to significant improvements in post-training scores across categories of the CATS tool compared to the baseline pre-intervention ratings (Table 2). In the VBL group, there were significant improvements in coordination (pre-intervention score: 5.46 ± 1.93, post-intervention score: 7.90 ± 2.50, $p<0.001$), situational awareness (pre-intervention score: 2.62 ± 1.07, post-intervention score: 3.68 ± 1.78, $p=0.006$), and communication (pre-intervention score: 4.75 ± 3.57, post-intervention score: 11.28 ± 3.72, $p<0.001$). In the RP group, significant improvement in ratings compared to baseline were noted across all four domains of the CATS tool (Table 2). Furthermore, comparison of the post-intervention ratings between the two groups revealed the RP to consistently outperforme VBL, with significantly higher post-intervention scores across coordination, situational awareness and cooperation ($p<0.001$ for each domain) (Fig. 1).

Qualitative results

Two FGDs were conducted at the end of each workshop on IPC and teamwork skills. Each focus group was

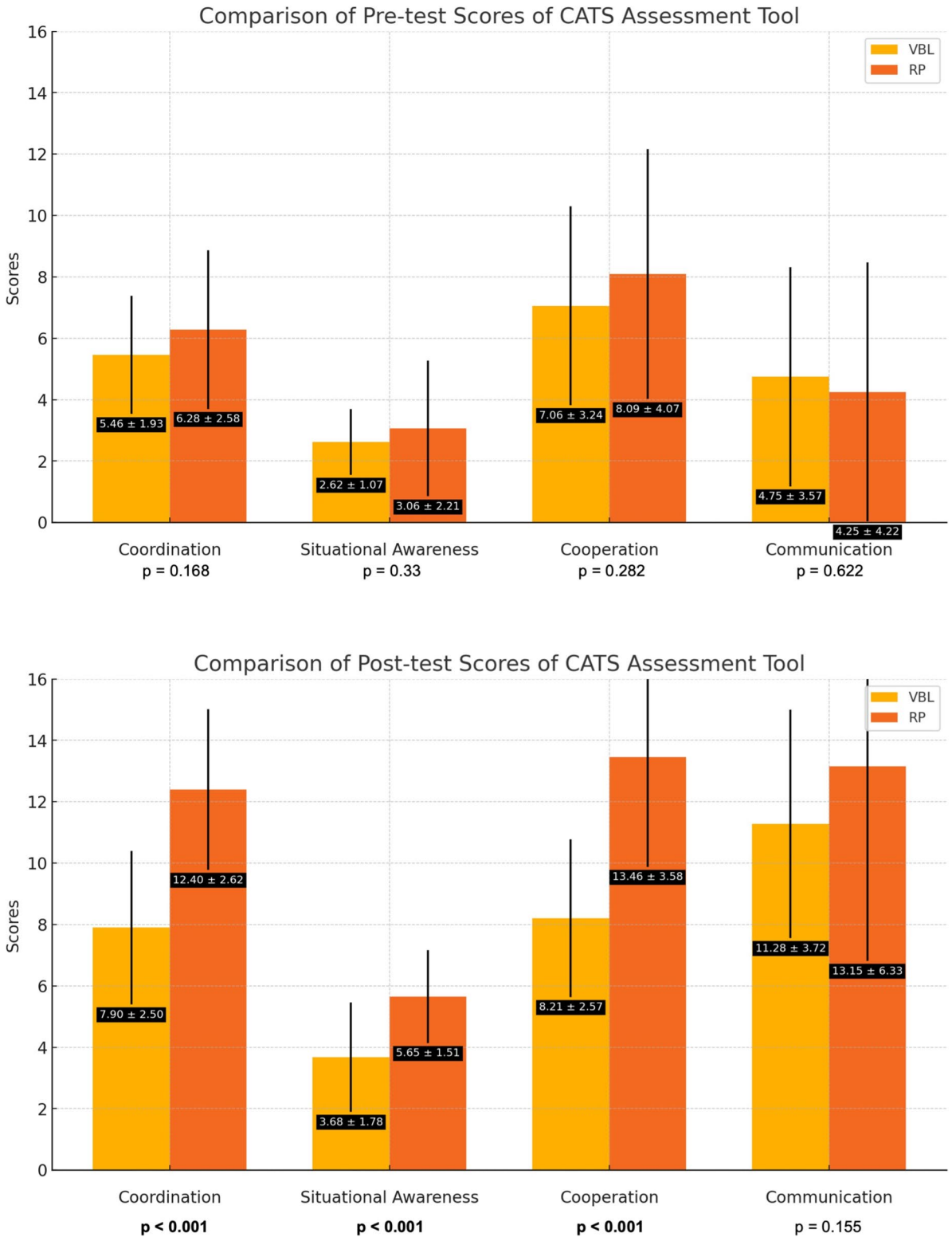

Fig. 1 Comparison of pre-test and post-test scores between VBL and RP groups

Table 2 Comparison of pre-test versus post-test scores across categories of the CATS assessment tool for VBL and RP groups

Category (Behaviours)	VBL Pre-test Scores Mean ± SD	VBL Post-test Scores Mean ± SD	*p*-value	RP Pre-test Scores Mean ± SD	RP Post-test Scores Mean ± SD	*p*-value
Coordination	**5.46 ± 1.93**	**7.90 ± 2.50**	**< 0.001***	**6.28 ± 2.58**	**12.40 ± 2.62**	**< 0.001***
Briefing	1.84 ± 0.72	2.50 ± 0.91	0.002*	2.87 ± 1.40	3.34 ± 0.60	0.091
Verbalize plan	1.62 ± 0.97	2.34 ± 1.00	0.005*	1.93 ± 1.54	3.34 ± 0.65	< 0.001*
Verbalize in expected timeframes	1.18 ± 0.78	1.75 ± 1.01	0.016*	0.91 ± 1.20	3.25 ± 0.72	< 0.001*
Debriefing	0.81 ± 0.47	1.31 ± 0.59	< 0.001*	0.47 ± 0.84	2.46 ± 1.56	< 0.001*
Situational Awareness	**2.62 ± 1.07**	**3.68 ± 1.78**	**0.006***	**3.06 ± 2.21341**	**5.65 ± 1.51**	**< 0.001***
Visually scan environment	1.15 ± 0.62	2.00 ± 0.91	< 0.001*	2.21 ± 1.31	2.90 ± 0.85	0.016*
Verbalize adjustments in the plan as changes occur	1.46 ± 0.91	1.68 ± 0.96	0.356	1.22 ± 1.48	2.75 ± 0.91	< 0.001*
Cooperation	**7.06 ± 3.24**	**8.21 ± 2.57**	**0.119**	**8.09 ± 4.07**	**13.46 ± 3.58**	**< 0.001***
Request external resources if needed	1.06 ± 0.56	1.28 ± 0.45	0.093	2.25 ± 1.75	2.53 ± 0.94	0.42
Ask for help from the team	1.12 ± 0.65	1.31 ± 0.69	0.272	1.46 ± 1.68	2.71 ± 0.88	0.001*
Verbally request team input	1.06 ± 0.50	1.12 ± 0.33	0.562	0.71 ± 1.22	2.71 ± 0.99	< 0.001*
Cross monitoring	1.28 ± 0.88	1.40 ± 0.66	0.526	0.90 ± 1.37	1.96 ± 1.59	.006*
Verbal assertion	1.12 ± 0.65	1.50 ± 0.56	0.018*	0.68 ± 1.25	2.56 ± 1.41	< 0.001*
Receptive to assertions and ideas	1.40 ± 0.83	1.59 ± 0.97	0.413	0.43 ± .98	0.96 ± 1.40	0.085
Communication	**4.75 ± 3.57**	**11.28 ± 3.72**	**< 0.001***	**4.25 ± 4.22**	**13.15 ± 6.33**	**< 0.001***
Closed loop	0.31 ± 0.53	1.65 ± 1.03	< 0.001*	1.87 ± 1.62	3.03 ± 1.37	.003*
SBAR[a]	1.12 ± 1.02	2.43 ± 0.98	< 0.001*	0.87 ± 1.21	3.25 ± 1.01	< 0.001*
Verbal updates think aloud	0.91 ± 0.96	2.15 ± 0.98	< 0.001*	0.43 ± 0.98	1.37 ± 1.82	.014*
Use names	0.66 ± 0.65	1.75 ± 0.71	< 0.001*	0.71 ± 1.05	3.03 ± 1.40	< 0.001*
Communicate with patients	0.59 ± 0.49	1.09 ± 0.39	< 0.001*	0.43 ± 0.98	1.09 ± 1.35	0.030*
Appropriate tone of voice	1.15 ± 1.02	2.18 ± 0.99	< 0.001*	0.06 ± 0.24	1.37 ± 1.80	< 0.001*

* *p*-value < 0.05 was taken as statistically significant

[a] *SBAR* Situation-Background-Assessment-Recommendation

comprised of 6 students each. The qualitative analysis from the FGDs provided insights into the participants' experiences and perceptions of the two teaching strategies (Table 3).

Participants in both the RP and VBL groups reported positive learning experiences, emphasizing the importance of effective communication in healthcare settings. They appreciated the structured teaching approach and found the sessions informative and engaging Participants in RP highlighted the impact of role play in enhancing confidence and avoiding hesitation during public speaking. Participants in the RP group also highlighted the interactive and realistic nature of role play, which facilitated experiential learning and skill development. They noted that role playing helped them understand the complexities of IPC and improved their confidence in public speaking and interacting with other healthcare professionals. The VBL group participants also found the video sessions beneficial, particularly in providing visual and structured learning experiences. They appreciated the realistic scenarios presented in the videos, which helped them understand effective communication techniques. However, some participants suggested that the inclusion of more diverse scenarios and examples would enhance the learning experience further.

Both groups identified several challenges during the sessions. Language barriers were mentioned as a significant obstacle to effective communication between doctors, patients, and staff. Participants also noted the initial difficulty in interacting with nurses and other professionals due to a lack of prior experience. Despite these challenges, the workshops were deemed successful in improving communication and teamwork skills. Participants in both groups provided suggestions for improvement. They emphasized the need for more practical experience with direct patient interaction to better prepare them for real-world scenarios. Continuous practice and more frequent workshops were recommended to reinforce the skills learned. Participants suggested that diversifying the teaching scenarios and providing multilingual support to address language barriers effectively will be beneficial for acquiring the communication skills more effectively among health professionals. Participants suggest that well-arranged situations can save time and

Table 3 Themes, subthemes, codes and verbatim quotes from the FGDs with the intervention participants

Theme	Sub-theme	Role Play (RP)	Video-Based Learning (VBL)
Effective Communication	Communication Skills	Enhanced confidence and reduced hesitation during public speaking. *"We gained a lot of knowledge and confidence for effective communication in the hospital."*	Improved understanding of communication with patients, seniors, and juniors. *"We learned how to communicate with others, patients, seniors."*
	Knowledge Gain	Promoted active learning through hands-on, experiential activities.	Provided structured insights into hospital communication scenarios.
	Positive Learning	Faculty guidance and interactive sessions created a comfortable and engaging environment. *"It was a positive experience learning from good faculty in a comfortable environment."*	Informative and visually structured teaching method appreciated by participants.
	Overcoming Hesitation	Helped participants overcome fear of speaking in group settings and develop confidence. *"I think it was a very good opportunity. My communication skills and my confidence have boosted up."*	Less impactful for reducing hesitation due to passive nature of watching videos. *"The videos were quite beneficial, but there was a lot of passive learning and not many interactive sessions"*
	Reducing Gaps	Promoted better understanding between doctors and nurses, fostering collaboration. *"Interacting with nurses helped us understand each other and support our patients better."*	Emphasized improving communication for patient outcomes. *"We learnt how improving communication between doctor and staff can enhance patient outcomes."*
Teaching Methodology	Identifying Mistakes	Highlighted and corrected communication errors through live feedback. *"We could observe each other's mistakes and give feedback"*	Encouraged recognition of communication gaps via video examples. *"The videos helped to recognize mistakes and promptly acting by communicating and bringing issues to the doctor's notice."*
	Practical Application	Demonstrated skills applicable in ward settings and real-world scenarios. *"It will help us utilise these skills in our wards."*	Demonstrated theoretical communication scenarios with limited real-world applicability.
	OSCE Relevance	Participants noted relevance of RP to future OSCE performance. *"It can help us improve our performance in OSCEs"*	Suggested incorporating communication skills into OSCE through VBL examples. *"The examples used in the videos can definitely be used in OSCE exams for communication skills."*
Perceived Challenges	Language Barriers	Addressed interprofessional communication struggles but highlighted lack of multilingual support. *"We should have scenarios in different languages because those situations can be challenging."*	Identified language as a significant obstacle. *"Language can be a barrier between doctor, patient, and staff."*
	Past Experience	Difficulties faced during first-time interaction with nurses and staff. *"First-time interaction with nurses was challenging."*	
	Time and Focus	Participants applauded the role-play scenarios for efficiency. *"It takes a little time and a was easy to concentrate."*	Timing issues noted in videos, reducing focus and engagement. *"Timing can be improved in the videos."*
Suggestions for Improvement	Practical Experience	Recommended extending role-play activities to include real patient interaction. *"… real patient interactions can improve awareness of symptoms."*	Suggested integrating videos with practical, hands-on sessions for better applicability. *"More practical experience with direct patient interaction."*
	Workshop Frequency	Advocated for more frequent role-play workshops to reinforce skills. *"We need such sessions regularly to solidify our skills."*	Suggested regular workshops to maintain communication proficiency. *"Continuous practice with workshops can improve communication."*
	Scenario Diversity	Suggested incorporating diverse clinical scenarios in role-play exercises. *"More examples and different scenarios will help us get more broad knowledge."*	Recommended covering a wider range of medical cases and symptoms. *"The more variety of cases we can include, the better it will be for our learning."*

concentration during communication The RP group, in particular, suggested that role plays should be integrated into the curriculum more extensively to provide ongoing opportunities for skill development.

The success of the workshops was acknowledged by participants of both groups. They expressed their interest in taking part in similar activities in the future, indicating a positive impact on their professional development and communication skills. Overall, the qualitative results highlighted the significance of communication skills in healthcare professionals and the effectiveness of experiential learning methods such as RP and VBL in enhancing these skills.

Discussion

The current study aimed to compare the effectiveness of RP and VBL in enhancing teamwork skills and IPC among undergraduate medical and nursing students. The findings demonstrated that while both methods significantly improved these skills, RP was consistently more effective across key domains, including coordination, situational awareness, cooperation, and communication skills, underscoring the value of RP as an engaging and interactive teaching method that facilitates experiential learning.

Our findings support the superiority of RP over VBL in enhancing coordination, situational awareness, cooperation, and communication skills. Both interventions led to significant improvements; however, RP consistently yielded higher mean scores across various subcategories, including verbalizing plans, situational adjustments, and requesting external resources. These findings align with prior studies which demonstrate that well-structured RP activities effectively promote critical thinking and communication skills [11, 12]. Role plays provide a safe environment for health professional students in which they experience both the doctor's, the patients, and other health professionals' perspectives, enabling them to learn the complexity of communication within a clinical setting [10].

The qualitative findings from the FGDs provided valuable insights and further reinforce the quantitative results. Both VBL and RP interventions were perceived positively in terms of learning experiences. Participants also perceived RP as more engaging, interactive, and realistic, facilitating experiential learning and skill development—findings consistent with several other studies conducted in various countries [13, 14, 24].

RP emerged as an effective tool for overcoming hesitation and improving communication skills among participants. The transformation observed in individuals who initially hesitated during public speaking signifies the potential of RP in boosting confidence and fostering effective communication. This highlights the significance of interactive learning methods, such as RP, in facilitating skill development and overcoming communication barriers [12].

The SBAR tool used in both workshops was recognized for its effectiveness in structuring communication and enhancing critical thinking, supporting its role in improving communication efficiency and patient outcomes [25, 26]. Its integration into both RP and VBL workshops supports its applicability in improving communication efficiency and patient safety.

The study's implications extend to improving patient outcomes through better communication and teamwork, underscoring the importance of interventions that simulate real-world scenarios and provide opportunities for active engagement and feedback. Addressing language barriers and incorporating diverse teaching methodologies remain essential for maximizing the effectiveness of such interventions in healthcare settings.

The strengths of this study include its robust mixed-methods design, which allowed for a comprehensive evaluation, integrating quantitative data with qualitative insights to provide a holistic understanding of the the effectiveness of RP and VBL. The randomization of participants and the use of validated assessment tools further strengthen the study's methodological rigor. However, several limitations must also be considered. Firstly, the relatively small sample size and single-center setting limits the generalizability of the findings. Including participants from multiple institutions could offer a more comprehensive understanding of the effectiveness of RP versus VBL. Additionally, the short duration of the intervention may also be a limitation, as extended periods could have allowed for a more thorough evaluation of the impact on IPC and teamwork skills. Furthermore, the study lacked long-term follow-up to assess the retention of these skills over time. Future studies should address these limitations by incorporating larger, multi-center samples, and incorporating long-term follow-up assessments to enhance the validity and applicability of findings and evaluate the long-term effects of such interventions.

Conclusions

Our study underscores the importance of incorporating hands-on, experiential learning approaches like RP in healthcare education to better prepare students for collaborative clinical practice, ultimately improving patient care outcomes. The findings have significant implications for healthcare education, particularly in resource-limited settings where RP offers a cost-effective and impactful alternative to more expensive training methods. Longitudinal studies could provide insights into the sustainability of the skills developed

using these teaching methodologies. By leveraging the strengths of experiential learning, educators can foster a culture of effective communication and teamwork, essential for delivering high-quality healthcare.

Abbreviations

CATS	Communication and Teamwork Skills
FGD	Focused group discussion
IPC	Interprofessional communication
PMC	Pakistan Medical Commission
RP	Role play
SPSS	Statistical Package for Social Sciences
VBL	Video-based Learning
WHO	World Health Organization

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12909-025-06840-5.

Supplementary Material 1.

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None.

Authors' contributions
SMA, SS and SM contributed to the conception and design of the work, as well as the acquisition of data. MB conducted the analysis and interpretation of quantitative data, while SRA and MGRM contributed to qualitative data analysis and drafting of qualitative results. SMA and MGRM contributed to the drafting of the manuscript and development of the figures. SS and SM contributed to critical review of the work. All authors read and approved the final manuscript and agree to be personally accountable for all parts of the work.

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Data availability
The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
Ethical approval was sought and obtained from the ethical review committees of Liaquat College of Medicine & Dentistry (Reference number: Ref. No.IRB/M-000072/23) and the Aga Khan University (Reference number: AKU ERC 2023–9153–26758) prior to the initiation of the study. Written informed consents were obtained after thorough discussions regarding the study's purpose and procedures with all the participants prior to participation in the interventions and the FGDs.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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