#### ORIGINAL RESEARCH

# Beyond Curriculum Reform: The Influence of Integration on Communication and Presentation Skills in Medical Students: A Mixed-Method Study

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**Purpose:** The present study aimed to explore the current presentation and communication practices among medical students and investigate the influence of adopting an integrated curriculum on communication and presentation skills in different phases, emphasizing the motivating and challenging aspects.

**Methods:** An exploratory mixed-methods two-phase study was conducted among 362 medical students at different phases of the program.

**Results:** The current study conveyed a comparable positive self-perception of the current presentation designs and styles among medical students. More than 72% and 53% of students thought problem and case-based learning positively influenced their communication and presentation skills, respectively. Interns were more likely to identify themselves as storytellers than students in earlier years (7.9/10). Most students (>80%) reported positive perceptions of their pronunciation, tone, volume, and fluency. There was a positive correlation between presentation and communication skills (r=0.534, p=0.000). Approximately 37% of students agreed that problem-based learning and case-based learning improved their presentation and communication skills. The primary reported challenges were the time constraints (40.1%), and the need for more training (34%) and practice (39.2%). Other reported challenges were the high stress levels and complex adaptation to audience expectations. The most motivating factors were the interest in improvement (66.3%), willing to increase self-confidence (64.9%), obtaining high grades (53.3%), and being more efficient (52.5%). Other motivations were exposure to real-world scenarios and the presence of role models. However, while students agreed that their skills are improving, this progress feels slow. Though clinical phase students showed higher achievement of several learning outcomes than younger students, basic science-phase students outperformed their clinical phase counterparts in recognizing the importance of teamwork (93.25% versus 91.16%).

**Conclusion:** The integrated curriculum offers equal opportunities to enhance communication and presentation skills in all phases of the program. Addressing the reported challenges and fostering the motivating factors are advisable.

Keywords: curriculum, communication, motivation, learning outcomes, doctor-patient relationship, innovative strategies

## Introduction

Effective communication with patients and health care teams is a core competency outlined in various physicians' competencies frameworks such as CanMED, ACGME, GMC, and SaudiMEDs.<sup>1–3</sup> Effective communication skills are the backbone of a successful doctor-patient relationship, contributing to enhanced patient safety, treatment proficiency, improved patient compliance, and reduced medical errors.<sup>4–6</sup> Furthermore, the development of effective communication

and presentation skills is essential for healthcare professionals, whether in small settings like scientific seminars or in large settings like national and international conferences and symposia.<sup>7</sup>

Evidence revealed that traditional learning and teaching strategies fail to adequately equip medical students with the necessary Communication Skills (CSs).<sup>8,9</sup> However, in the competency-based medical education era, graduates are expected to demonstrate proficiency in all essential domains, including knowledge, skills, and attitude.<sup>10</sup> Communication skills are closely linked to both skills and attitude domains and require structured, continuous training.<sup>11</sup> To address this need, student-centered integrated medical curricula introduced new learning strategies that support interpersonal and communication skills development to improve interaction and collaboration with one another in medical practices.<sup>12–14</sup> Moreover, strong verbal presentation skills enhance leadership development, professional development and improve teamwork among medical students.<sup>15</sup>

Problem-Based Learning (PBL), Case-Based Learning (CBL) and Project-Based learning (PBL) are studentcentered learning strategies that are introduced to develop students' professional presentation and communication skills.<sup>16–20</sup> In addition, as assessment drives learning, most of the medical schools' reformed curricula adopted Objective Structured Practical Examinations (OSPE) and Objective Structured Clinical Examinations (OSCE) to assess and reinforce learning communication skills.<sup>21</sup> Moreover, Simulated Patients (SPs) are found to be a very applicable method in medical education for both learning and assessing communication skills.<sup>19</sup> Despite these advancements, mastering presentation and communication skills are reported to be difficult for health colleges students, with fear and anxiety identified as major barriers.<sup>11,22</sup>

Despite the increasing emphasis on communication and presentation skills in student-centered medical curricula, students' proficiency in these skills remains underreported. Therefore, the present study aimed to investigate the influence of adopting the student-centered integrated hybrid curriculum on communication and presentation skills among medical students. In this research, we will try to address the following questions:

- i. How does an integrated hybrid curriculum influence medical students' communication and presentation skills in different phases of the program?
- ii. What are the current practices of communication and presentation skills among medical students in the different phases of the program?
- iii. What are the motivations that enhance medical students' communication and presentation skills?
- iv. What are the barriers that impede the development of communication and presentation skills among medical students?

# **Theoretical Background**

## Social Cognitive Theory

Our learning is social in nature, and we learn through interaction with others and with the environment. This theory unites two learning approaches: the behaviorist approach, which highlights the impact of the environment on our actions, and the cognitive approach, which focuses on the role of cognition in facilitating our learning and functioning. Both are innate components of effective presentation and communication.<sup>23</sup>

# Experiential Learning Theory

Kolb's experiential learning theory concluded that learning is best achieved in an environment that considers both concrete experiences and conceptual models. The integration concept is related to this theory, considering the necessity of adopting the actual experience and education in learning. Kolb's four learning environments include affectively oriented (feeling), symbolically oriented (thinking), perceptually oriented (watching) and behaviorally oriented (doing). Students' learning is enhanced when they adopt the four mentioned elements.<sup>24</sup> Grasping and transforming the learning experience should be through reflection and action. Effective communication is mainly articulated on Kolb's experiential learning theory.<sup>25.</sup>

# Self-Directed Learning Theory

Self-direction is a natural human process that can occur both within and outside formal settings. One of the factors influencing a learner's ability to be self-directed is the environment or format of the teaching situation. Much of professional learning takes place in context, making it closely tied to the specific situation where knowledge is applied. Effective external feedback—such as comments from teachers, tutors, and peers—plays a crucial role in self-regulation. This feedback helps direct a learner's focus towards the key requirements of a task and the behaviors or processes necessary for adapting or correcting errors.<sup>26</sup> Presentation and communication demand the learner to take the responsibility and to be involved in self-directed learning.<sup>24</sup>

# **Reflection and Reflective Practice**

Reflection is the centre of the epistemology of professional practice. By practicing reflection, students can learn from their experience in an ongoing iterative process. They can interpret theories in light of personal current and past experiences and promote their critical thinking. Hence, reflection links three major epistemologies about the nature of knowledge and how we can know and understand our world, including the positivism, interpretive theory, and critical theory. Indeed, reflection serves as a bridge in the theory–practice relationship.<sup>26</sup> Effective presentation and communication are genuine metaphors for practicing reflection in medical education.

# **Materials and Methods**

## Study Design and Setting

The current study is an exploratory mixed-methods two-phases study, encompassing a quantitative component (researcher-made questionnaire) and a qualitative component {focus group discussions (FGD) for faculty members and medical students}. This study was conducted among undergraduate medical students at the College of Medicine (COM), Dar al Uloom University (DAU), Saudi Arabia. COM, DAU adopts an integrated 7-year hybrid curriculum. In hybrid curricula, diverse teaching methods are adopted, and these types of curricula do not rely solely on PBL or CBL. Instead, they include traditional lectures, laboratory sessions, bedside teaching activities, and hands-on clinical experiences which create a balanced educational framework preparing students effectively for the demands of medical practice.

Students join the university preparation program (UPP) in the first year. Then, they enroll in the basic phase for two years, where basic material sciences are taught in an integrated module-based format representing the major body systems. In the preclinical phases, students are involved in structured clinical skills sessions that are designed to introduce them to essential clinical competencies. These sessions are held in a dedicated clinical skills and simulation center certified from the American Heart Association, where students engage in hands-on practice with standardized patients, and simulation scenarios. This approach allows students to develop and achieve the introductory clinical skills in a controlled environment. When students pass the basic phases successfully, they are involved in the clinical skills sessions, the students attend bedside teaching activities. The seventh (last) year of the program is the internship year.

# Sampling and Sample Size Calculation

Convenience sampling was adopted to approach all eligible students. The sample size was calculated using the Epiinfo<sup>TM</sup> software statistical package created by the World Health Organization and the Centre for Disease Control and Prevention.<sup>27</sup> The criteria used for sample size calculation were as follows: 95% significance level, expected frequency of 85% positive perception of students that communication should be integrated with medical curricula and confidence limit of 4%.<sup>8</sup> The minimal sample size based on the previously mentioned criteria was found to be 307, and accounting for a 15% non-response rate, the sample size was increased to 353. However, 371 students submitted their responses, and 362 responses were complete.

# Inclusion and Exclusion Criteria

Aside from students in the UPP, all active students registered in any phase of the program who consented to participate in this study were considered eligible. Students should complete at least two modules to be eligible. Participants were grouped into two groups reflecting the basic and clinical phases of the program. However, students suspended for more than two years were excluded from the study besides those with incomplete responses.

# **Ethical Considerations**

Data were collected after obtaining approval from the institutional review board (IRB) of COM, DAU (approval number PR23030015), following the recommendations of the Declaration of Helsinki, 1964, and its subsequent amendments; the collected data were handled anonymously to maintain the confidentiality of the participants. Moreover, all participants gave their written informed consent before their inclusion in the study. Besides, the students gave their consent to publish anonymized quotes.

# Data Collection Instruments

## Self-Administered Questionnaire

Participating students were requested to complete a self-administered questionnaire sent through a QR code leading to a google form. A statement that clearly stated the study's objectives and procedures was added at the beginning of the questionnaire. Every participant reported their age, sex, and level of study before completing other sections of the questionnaire.

The questionnaire was designed through a systematic process. Initially, we conducted a comprehensive literature review to identify existing validated instruments related to our study focus. We adopted the questionnaires we used from established instruments introduced by Clarke et al,<sup>7</sup> and and Chiang et al<sup>22</sup> Nevertheless, the selected items were reviewed and tested for clarity and functionality. After piloting, further adjustments were made to refine the items before finalizing the instrument.

The questionnaire consisted of five other sections, and the students had to answer all items as follows:

- i. The first section assessed the current design of students' presentations. It consists of five items in which the student describes his/her usual format of presentation on a 3-point Likert scale (almost never use, sometimes use, almost always use)], including bullet points and/or text, images, photos, and art, graphs and charts, video and eventually existing template.
- ii. The second section assessed the respondents' perceptions of their current presentation styles. It consists of five items, and the students were asked to rate themselves on a one out of 10 Likert scale, where 1 is a pretty lousy presenter, and 10 is an amazing rock-star presenter. The items included in this section were as follows: How would you rate yourself as a presenter?, How would you rate yourself as a storyteller?, Rate your comfort with using technology in your presentations, Rate your ability to determine the right content for your presentations, and How confident are you that you can improve the effectiveness of your presentation delivery?. The presentation scale is the sum of 5 questions, with responses to each question ranging from 1 to 10. So, the total presentation scale ranges from 5 to 50.
- iii. The third section evaluated the self-perception of communication skills. Students answered eight 5-point Likert scale questions ranging from never (0) to always (4). The Communication scale is the sum of these questions ranging from 0 to 32. This section included the following items: Do you demonstrate confidence and an appropriate level of enthusiasm when presenting your work?, Do you use body language in a manner that increases the audience's interest?, Do you interact with the audience using eye contact during the question-and-answer session?, Do you respond to the audience's questions properly?, Does your performance resonate with the audience and attract their interest?, Does the pronunciation of the words in your presentation is correct?, Are the tone and volume of your voice appropriate? and Are your words and phrases smooth and fluent?

- iv. The fourth section assessed the impact of teaching strategies on presentation and communication skills. Students were asked to answer two questions about their feeling that PBL or CBL and clinical skill sessions developed their presentation and communication skills. These two items were answered on a 5-point Likert scale, with responses to each question ranging from strongly disagree (1) to strongly agree (5). So, the impact of the teaching strategies on the scale ranges from 2 to 10.
- v. The fifth section was about the barriers/challenges for being a highly effective presenter and motivations to improve for improving presentation and communication skills. Students were requested to opt for one or more of the following barriers: lack of training on best practices, lack of feedback from tutors, lack of technical skills and expertise, lack of practice, lack of time to prepare a good presentation, too much information to be presented in restricted time, loss of words and feeling not confident, fear, poor English language, and topic complexity and high level of difficulty. Motivations included interest in improving, enhancing future career opportunities, increasing self-confidence, being more efficient, and getting better grades; other presentations of my colleagues seemed better; I felt the audience seemed bored during my presentation, Recommendations of trusted colleagues, and Recommendations from my tutors.<sup>7</sup>

#### Focused Group Discussion (FGD)

FGDs were conducted following the FGD criteria established by Krueger.<sup>28</sup> FGD included two investigators (representatives from the Basic and Clinical Medical Sciences departments), while the selected students were originally the representatives of their levels (2–7) in the program. Opting for those members was based on the assumption that they could provide in-depth and detailed information about the aim of the study. A semi-structured guide was used in the FGD to guide the conversation (<u>Appendix 1.1</u>). Each FGD lasted 45 minutes, and students' responses were transcribed by independent faculty. The following open-ended questions were mainly focused on the information that could be obtained in the quantitative part, as follows:

- i. What other challenges influence the quality of student's presentation and communication skills?
- ii. What are other motivations that improve the quality of student's presentation and communication skills?
- iii. Describe the change in your presentation and communication skills since joining the program.

#### Intended Learning Outcomes (ILOs) Assessment

In the present study, we assessed medical students' overall achievement (%) in the learning outcomes related to presentation and communication skills. These intended learning outcomes aligned with the graduate attributes adopted from the SaudiMEDs framework. The SaudiMEDs specify the learning outcomes and enable competencies (graduate attributes) that are expected from all medical graduates in Saudi Arabia. Presentation and communication skills are related to the fourth graduate attribute, "Effective communication with patients and their families and the practicing of collaborative care by working in partnership within a multi-professional team". This graduate attribute is planned to be achieved through ten intended learning outcomes, as follows:

- i. ILO 6.8 Demonstrate effective counseling skills
- ii. ILO 7.6 Report any concurrent physical, social or mental ailment that would affect patient care to appropriate authorities
- iii. ILO10.1 Communicate effectively with patients and their families regardless of their age, gender, social, cultural, religious, or ethnic backgrounds in various situations.
- iv. ILO10.2 Demonstrate the ability to deal with patients in difficult circumstances.
- v. ILO10.3 Demonstrate the ability to break bad news sensitively and effectively.
- vi. ILO10.4 Communicate medical information appropriately, using verbal and writing skills (eg patient records, referrals, medical reports).
- vii. ILO11.1 Collaborate and identify the roles of various healthcare professionals involved in patient care and collaborate with them.

- viii. ILO11.2 Make clinical judgments and decisions, in partnership with other colleagues as appropriate for a graduate's level of training and experience.
- ix. ILO11.3 Recognize and stress the rationale and importance of teamwork.
- x. ILO 13.2. Recognize and manage conflict of interest.

## Rigor

### Quantitative Data

- i. The validity of the questionnaire was tested via distributing hard copies of the validation form together with the questionnaire and cover letter showing authors name, aim and objectives of the study. Three experts in medical education assessed the validity of the questionnaire. The experts recommended simplifying some questions. Regarding the time required to finish the questionnaire by participants, experts expect that participants could fill it out in 5 to 10 min. Based on that, 10 minutes were allocated to fill out the questionnaire.
- ii. The authors calculated the content validity index (CVI) and content validity ratio (CVR) to measure the questionnaire's content validity. They ranged from 0.81 to 1.00, and all items were considered relevant.<sup>29,30</sup>
- iii. Then the adopted questionnaire underwent piloting with ten participants. Piloting revealed that three items were modified to be more precise and clearer, and an estimated 8–10 minutes are needed to finalize the questionnaire. These ten responses were excluded from the final analysis.
- iv. To assess reliability, the study tool was tested by the pilot subjects at first session and the calculated Cronbach's Alpha was 0.763. Moreover, the internal consistency reliability was calculated using Spearman-Brown Prophecy formula (r1=2(r)/1+r) where r estimated correlation coefficient computed on the split halves and r1 estimated reliability of the entire test and it was 0.812 which represented adequate internal consistency.<sup>31.</sup>

#### Qualitative Data

- i. Reflexivity of the data analysts was maintained through data collection and analysis. We adopted two strategies to harness the reflexivity, including reflective writing and collaborative reflection. Researcher documented all reflections happening during the research process in memos, and document critical interpersonal dynamics impacting participants and their data. As the researchers involved in data collection and analysis know each other, collaboration was maintained within the team and between the team and participants, to solve difficult questions and to build a solid foundation of trust and mutual responsibility, regardless of seniority and status.<sup>32</sup>
- ii. To ensure the obtained data are reliable, the data analysis continued until we reached thematic saturation, where no new themes emerged from the data. This was assessed through iterative coding and discussions among the research team after each focus group session, allowing us to ensure that our findings were comprehensive and representative of the participants' experiences.
- iii. To confirm the rigor of our analysis, we employed triangulation, where more than one investigator analysed the data, and the obtained findings were compared across different focus groups.
- iv. Assessing the inter-rater reliability and the consistency of analysis between the two investigators yielded an overall good reliability of about 0.81.<sup>33</sup>

## Data Analysis

The collected data were analyzed using the IBM Statistical Package for the Social Sciences Program (SPSS) Statistics for Windows, version 25 (IBM Corp., Armonk, N.Y., USA). Qualitative data was expressed as a number and percentage and tested using the chi-squared test. When inappropriate, the Monte Carlo Exact test was used. Quantitative data was expressed as mean and standard deviation, median and interquartile range and tested by Mann Whitney *U*-test or Kruskal Wallis test after testing for normality, using Shapiro–Wilk test, and according to several compared groups. The Spearman correlation between different presentation styles and communication and presentation skills items among study participants was performed. The significance level was set to P value < 0.05 and a 95% confidence interval (CI).

For qualitative analysis, we used the thematic analysis approach described by Braun and Clarke to extract code and interpret the data using QSR NVivo version 12.<sup>34</sup> An inductive approach was adopted to generate the themes from within

the data itself, and a deductive approach was used to bring to the data a series of concepts, ideas, or topics that were used to code and interpret the data. To combine both deductive and inductive approach we went through a five-approach method adopted by Braun and Clarke including:<sup>34</sup>

#### Familiarization with the Data

This phase is achieved through carefully reading and re-reading the text while taking notes and comments through annotating transcripts, writing comments in a notebook and underling portions of data reflecting the preliminary thoughts and observations. These comments aimed to authentically represent the participants' voices and accurately convey their narratives.

### Generating Initial Codes

At this step, we identified codes and provided labels for items that is potentially relevant to the research question. The codes described or interpret the content of the data and summarized them. We have carefully reviewed each item, coding each one in its entirety before moving on to the next. As the coding progress was ongoing, we modified existing codes to incorporate new material, if needed. Every generated code was linked with the portion of text related to it.

#### Searching for Categories and Themes

This phase included reviewing the coded data to identify similarity and overlap between codes. Then we clustered the codes that have common unifying feature together. This process included revisiting the themes in relation to the original text to cluster related ideas and establish any existing hierarchical relationships. The integration of themes extracted from all participants' responses was conducted in a cyclical manner.

#### **Reviewing Potential Themes**

The developed themes were reviewed in relation to the coded data and entire dataset. In this phase, potential themes were incorporated together or divided to further specific or coherent themes. All generated themes were found meaningfully capturing the entire dataset.

#### Defining and Naming Final Themes

Final themes were checked for clear focus, scope and purpose. We made sure that each theme had singular focus, not overlapping or repetitive for other themes and addressing the research question. Then these themes were written and numbered. <u>Appendix 1.2</u> shows some codes, categories and themes generated in the present study.

## Results

## Characteristics of Study Participants

The study was conducted among 447 medical students. Three hundred seventy-one students submitted responses, yielding a response rate of approximately 83%. After excluding incomplete responses, the final sample consisted of 362 participants. The majority were female (n=195, 53.9%), while males constituted 46.1% (n=167). Approximately half of the students (n=188, 51.9%) were in the clinical phase, whereas 174 students (48.1%) were in the basic science phase. Students in year 4 represented about 32% of the sample, while internship-year students were the least represented (n=9, 2.5%). The mean age of participants was  $23.3 \pm 3.3$  years, with no significant gender differences between students in different program phases.

## Students' Responses to the Questionnaire

Regarding presentation design (Table 1), the most commonly used format among medical students was bullet points and/ or text (n=239, 66%), followed by images, photos, and artwork (n=201, 55.5%). In contrast, videos (18.5%) and graphs/ charts (19.6%) were the least frequently used elements. Additionally, a considerable proportion of students in both the basic (28.2%) and clinical (21.8%) phases preferred using pre-designed templates. No significant differences in design preferences were found between the two phases (p > 0.05).

Presentation Design		P	hase		Total (	(n=362)	P value Chi Square Test
	Basic (	(n=174)	Clinical	(n=188)			
	n	%	n	%	n	%	
Bullet points and/or text							
Almost never use	5	2.9	7	3.7	12	3.3	0.895
Sometimes use	53	30.5	58	30.9	111	30.7	
Almost always use	116	66.7	123	65.4	239	66.0	
Images, photos, art							
Almost never use	8	4.6	10	5.3	18	5.0	0.401
Sometimes use	63	36.2	80	42.6	143	39.5	
Almost always use	103	59.2	98	52.1	201	55.5	
Graphs, charts							
Almost never use	46	26.4	53	28.2	99	27.3	0.187
Sometimes use	87	50.0	105	55.9	192	53.0	
Almost always use	41	23.6	30	16.0	71	19.6	
Videos:							
Almost never use	81	46.6	82	43.6	163	45.0	0.463
Sometimes use	58	33.3	74	39.4	132	36.5	
Almost always use	35	20.1	32	17.0	67	18.5	
Existing template:							
Almost never use	38	21.8	38	20.2	76	21.0	0.267
Sometimes use	87	50.0	109	58.0	196	54.1	
Almost always use	49	28.2	41	21.8	90	24.9	
Total presentation design score (0–10)							
Mean ± SD	5.9	±1.8	5.7	±1.6	5.8	±1.7	0.308ª
95% Confidence interval of the mean	5.6	-6.2	5.4-	-5.95	5.6-	-6.01	
Median (IQR)	6(5	5–7)	5(5	5–7)	6(5	5–7)	
Range	2-	-10	0-	-10	0-	-10	

Table I The Current Presentation Design According to The Phase Among Study Participants

Note: <sup>a</sup>p value for Mann Whitney U-test.

Table 2 depicts that students in all program phases were comfortable using technology in their presentations (mean=8 out of 10). However, students perceived their ability to determine the right content for their presentations and were greatly confident in their ability to improve the effectiveness of their presentation delivery (mean=7.8 out of 10). Though some aspects were slightly better perceived by senior students (clinical phase), these variations did not reach the level of statistical significance. As shown in Figure 1, students in the internship year (Year 7) were likelier to identify themselves as storytellers than students in earlier years. A weak to moderate positive correlation was observed between different presentation styles, particularly between the "presenter" and "storyteller" styles (r=0.55, p=0.000), as shown in Table 3.

Out of 10	Ph	ase	Total	95% CI*	P value	
		Basic	Clinical			
How would you rate yourself as a presenter	Mean ± SD	6.9 ±2.0	7.1±1.7	7.0±1.8	6.8–7.2	0.499
	Median (IQR)	7(6–8)	7(6–8)	7(6–8)		
	Range	1–10	I–10	1–10		
How would you rate yourself as a storyteller	Mean ± SD	6.3±2.4	6.5±2.2	6.4 ±2.3	6.2–6.7	0.467
	Median (IQR)	6(5–8)	7(5–8)	7(5–8)		
	Range	1–10	1–10	1–10		
Rate your comfort with using technology in your	Mean ± SD	8.1±1.9	8.0±1.9	8.0±2.0	7.7–8.2	0.222
presentations	Median (IQR)	8(7–10)	8(7–9.75)	8(7–10)		
	Range	2–10	1–10	1–10		
Rate your ability to determine the right content for your	Mean ± SD	7.7±1.9	7.9±1.8	7.8±1.8	7.6–8.0	0.302
presentations	Median (IQR)	8(6-9)	8(7–9)	8(7–9)		
	Range	2–10	1–10	1–10		
How confident that you can improve the effectiveness of	Mean ± SD	7.7±1.9	7.9±1.8	7.8±1.8	7.5–8.0	0.306
your presentation delivery	Median (IQR)	8(6–9)	8(7–9)	8(7–9)		
	Range	2–10	I–10	1–10		
Total (5–50)	Mean ± SD	36.7±7.2	37.3±6.8	37.0±7.0	36.3–7.8	0.420
	Median (IQR)	37.5(32–41)	38(34-41)	38(33–41)		
	Range	9–50	5–50	5–50		

Table 2 The Self-Perception of Current Presentation Style According to The Phase Among Study Participants

Notes: Mann Whitney U-test. \*confidence interval of mean.

Abbreviations: SD, Standard deviation; IQR, interquartile range.

Regarding communication skills, across both phases, only a small percentage of students (n=11, 3.1%) reported feeling unconfident or lacking enthusiasm when presenting. Most students (n=224, 67.4%) frequently or always used body language to engage their audience. Similarly, 71.6% of students maintained eye contact during Q&A sessions, and 73.7% responded effectively to audience questions. The majority of students also reported positive perceptions of their pronunciation, tone, volume, and fluency, with 84.3%, 80.4%, and 80.1% of students, respectively, selecting mostly or always (Table 4).

Investigating the impact of different teaching strategies on presentation and communication skills was time-worthy. Approximately 37% of students in both the clinical and basic science phases agreed that PBL and CBL sessions improved their presentation and communication skills; 37% in each phase strongly agreed with the same concept. Similarly, more than half of the students (53.3%) acknowledged the positive impact of clinical skill sessions in improving their presentation and communication skills (Table 5).

The most frequently selected barrier for delivering effective presentations was a lack of time for preparation, reported by 42.5% of students in the basic phase and 37.8% in the clinical phase. In contrast, the least reported challenge was insufficient technical skills and expertise (14.1%). Notably, over 80% of students did not perceive the lack of tutor feedback, technical skills, time constraints, lack of confidence, poor English proficiency, or topic complexity as major obstacles (Table 6). On the other hand, the most common motivators for students to enhance their communication and presentation skills were personal interest in self-improvement (66.3%) and increasing self-confidence (64.9%). Notably, students in the clinical years were significantly more motivated by career advancement opportunities than those in the



How confident that you can improve the effectiveness of your presentation delivery

Figure I The self-perception of current presentation style according to the levels (2-7) among study participants.

basic science years (p=0.042). Conversely, students in the basic science years were more influenced by tutor recommendations (19%) compared to those in higher levels (9%) (p=0.006) (Table 7).

Figure 2 demonstrates the moderate positive correlation between the communication and presentation scales (r=0.534, p=0.000). In addition, Figure 3 indicates that the presentation skills were negatively correlated with barriers ((r=-0.251, p=0.000) but positively correlated with the impact of teaching strategies (r=0.233, p=0.000). No significant correlation was found between presentation skills and motivation (p=0.911). In addition, the communication scale was negatively correlated with barriers (r=-0.208, p=0.000) and positively correlated with the impact of teaching strategies (r=-0.207, p=0.000) (Figure 4). Student performance was notably high among the five assessed learning outcomes in the clinical

	As a Presenter		As a Storyteller		Using Technology		Determin	ne Content	Improve Presentation			
	r	P Value	r	P Value	r	P Value	r	P Value	r	P value		
As a presenter	1.000						-					
As a storyteller	0.550	0.000*	1.000									
Using technology	0.354	0.000*	0.277	0.000*	1.000		-					
Determine content	0.455	0.000*	0.263	0.000*	0.408**	0.000*	1.000			-		
Improve presentation	0.466	0.000*	0.273	0.000*	0.317**	0.000*	0.463**	0.000*	1.000			

Table 3 Correlation Between Different Presentation Styles Among Study Participants

Note: \*sig: p value < 0.05.

Variables		Ph	Phase			tal	P value	
	В	asic	Cli	nical	(n=	362)	MCET <sup>®</sup>	
	(n=	=174)	(n=	=188)				
	n	%	n	%	n	%		
Do you demonstrate confidence and an appropriate level of enthusiasm when presenting your work								
Never	4	2.3	2	1.1	6	1.7	0.633	
Rarely	3	1.7	2	1.1	5	1.4		
Sometimes	55	31.6	72	38.3	127	35.1		
Mostly	71	40.8	73	38.8	144	39.8		
Always	41	23.6	39	20.7	80	22.1		
Do you use body language in a manner that increases the audience's interest								
Never	2	1.1	Ι	0.5	3	0.8	0.046*	
Rarely	9	5.2	14	7.4	23	6.4		
Sometimes	36	20.7	56	29.8	92	25.4		
Mostly	54	31.0	64	34.0	118	32.6		
Always	73	42.0	53	28.2	126	34.8		
Do you interact with the audience using eye contact during the question-and-answer session								
Never	I	0.6	3	1.6	4	1.1	0.406	
Rarely	12	6.9	12	6.4	24	6.6		
Sometimes	33	19.0	42	22.3	75	20.7		
Mostly	50	28.7	64	34.0	114	31.5		
Always	78	44.8	67	35.6	145	40.I		
Do you respond to the audiences' questions properly								
Never	0	0.0	2	1.1	2	0.6	0.201	
Rarely	10	5.7	9	4.8	19	5.2		
Sometimes	36	20.7	38	20.2	74	20.4		
Mostly	76	43.7	66	35.1	142	39.2		
Always	52	29.9	73	38.8	125	34.5		
Does your performance resonate with the audience and attract their interests								
Never	2	1.1	2	1.1	4	1.1	0.951	
Rarely	6	3.4	7	3.7	13	3.6		
Sometimes	65	37.4	67	35.6	132	36.5		
Mostly	70	40.2	72	38.3	142	39.2		

## Table 4 Perception of Communication Skills According to The Phase Among Study Participants

(Continued)

Table 4 (Continued).

Variables		Ph	ase		То	otal	P value
	B (n=	asic =174)	Cli (n=	nical =188)	(n=	362)	MCET <sup>a</sup>
	n	%	n	%	n	%	
Always	31	17.8	40	21.3	71	19.6	
Does the pronunciation of the words in your presentation is correct							
Never	I	0.6	0	0.0	Ι	0.3	0.879
Rarely	Ι	0.6	Ι	0.5	2	0.6	
Sometimes	25	14.4	29	15.4	54	14.9	
Mostly	79	45.4	91	48.4	170	47.0	
Always	68	39.1	67	35.6	135	37.3	
Are the tone and volume of your voice appropriate							
Never	2	1.1	Ι	0.5	3	0.8	0.830
Rarely	5	2.9	6	3.2	11	3.0	
Sometimes	25	14.4	32	17.0	57	15.7	
Mostly	69	39.7	79	42.0	148	40.9	
Always	73	42.0	70	37.2	143	39.5	
Are your words and phrases smooth and fluent							
Never	Ι	0.6	0	0.0	Ι	0.3	0.212
Rarely	6	3.4	Ι	0.5	7	1.9	
Sometimes	31	17.8	33	17.6	64	17.7	
Mostly	79	45.4	84	44.7	163	45.0	
Always	57	32.8	70	37.2	127	35. I	
Total communication score (0–32)							
Mean ± SD	24.	l±4.8	23.	9±4.5	23.9	9±4.6	0.385 <sup>b</sup>
95% Confidence interval of the mean	23.4	1–24.9	23.2–24.5		23.5–24.5		
Median (IQR)	2 (22	24.5 2–28)	24 (20–27)		24(21–27)		
Range	3	-32	9	-32	3–32		

Notes: MCET= Monte Carlo Exact Test, as some cells contain small numbers and Chi-square in NA, \*sig: p value < 0.05 b p value for Mann Whitney U-test.

phase (>84%). Clinical phase students demonstrated significantly better performance in four key objectives, including Effective counseling skills, reporting concurrent physical, social, or mental conditions affecting patient care, Breaking bad news sensitively and effectively, and recognizing and managing conflicts of interest. Basic science phase students, however, outperformed their clinical phase counterparts in recognizing the importance of teamwork (93.25% vs 91.16%) (Figure 5).

Perception		Ph	ase		То	otal	P value MCET
	B (n=	asic :174)	Cli (n=	nical :188)	(n=	362)	
	n	%	n	%	n	%	
I feel PBL or CBL sessions develop my presentation and communication skills							
Strongly disagree	4	2.3	3	1.6	7	1.9	0.204
Disagree	6	3.4	15	8.0	21	5.8	
Neutral	41	23.6	31	16.5	72	19.9	
Agree	59	33.9	69	36.7	128	35.4	
Strongly agree	64	36.8	70	37.2	134	37.0	
I feel Clinical skill sessions develop my presentation and communication skills							
Strongly disagree	11	6.3	6	3.2	17	4.7	0.296
Disagree	20	11.5	23	12.2	43	11.9	
Neutral	56	32.2	53	28.2	109	30.1	
Agree	52	29.9	53	28.2	105	29.0	
Strongly agree	35	20.1	53	28.2	88	24.3	
Total impact score (2–10)							
Mean ± SD	7.5	±1.8	7.6	±1.9	7.5	±1.8	0.207 <sup>a</sup>
95% Confidence interval of the mean	7.1	-7.7	7.3–7.9		7.3–7.7		
Median (IQR)	8(6–9)		8(6–9)		8(6–9)		
Range	2	-10	2	-10	2-	-10	

 Table 5 The Impact of Teaching Strategies on Presentation and Communication Skills According to The Phase Among Study

 Participants

**Notes**: <sup>a</sup>p value for Mann Whitney U-test.

Abbreviation: MCET, Monte Carlo Exact Test.

Table 6	Barriers A	And Ch	allenges	for Be	eing H	Highly	Effective	Presenter	According to	The	Phase A	Among S	tudy F	Participant	S

Barriers and Challenges		P	hase		То	otal	P value Chi Square Test	
	Ba (n=	Basic Clinical (n=174) (n=188)		(n=	362)			
	n	%	n	%	n	%		
Lack of training on best practices								
No	113	64.9	126	67.0	239	66.0	0.677	
Yes	61	35.1	62	33.0	123	34.0		
Lack of feedback from tutors								
No	149	85.6	147	78.2	296	81.8	0.067	
Yes	25	14.4	41	21.8	66	18.2		

(Continued)

## Table 6 (Continued).

Barriers and Challenges		P	hase		Τα	otal	P value Chi Square Test
	Ba (n=	asic 174)	Clin (n=	nical 188)	(n=	362)	
	n	%	n	%	n	%	
Lack of technical skills and expertise							
No	150	86.2	161	85.6	311	85.9	0.877
Yes	24	13.8	27	14.4	51	14.1	
Lack of practice							
No	100	57.5	120	63.8	220	60.8	0.216
Yes	74	42.5	68	36.2	142	39.2	
Lack of time to prepare good presentation							
No	100	57.5	117	62.2	217	59.9	0.356
Yes	74	42.5	71	37.8	145	40.1	
Too much information to be presented in restricted time							
No	141	81.0	152	80.9	293	80.9	0.965
Yes	33	19.0	36	19.1	69	19.1	
Loss of words and feeling not confident							
No	138	79.3	160	85.1	298	82.3	0.149
Yes	36	20.7	28	14.9	64	17.7	
Fear							
No	132	75.9	140	74.5	272	75.1	0.759
Yes	42	24.1	48	25.5	90	24.9	
Poor English language							
No	142	81.6	166	88.3	308	85.1	0.074
Yes	32	18.4	22	11.7	54	14.9	
Topic complexity and high level of difficulty							
No	143	82.2	160	85.1	303	83.7	0.452
Yes	31	17.8	28	14.9	59	16.3	
Total barriers score (0–10)							
Mean ± SD	2.5	±1.5	2.3	±1.5	2.4	±1.5	0.205ª
95% Confidence interval of the mean	2.2	-2.7	2.08	3–2.5	2.2	-2.5	
Median (IQR)	2(	I4)	2(	I–3)	2(1	-3)	
Range	0	6	0	6	0	6	

Note: <sup>a</sup>p value for Mann Whitney U-test.

Motivation		PI	nase	Total (	n=362)	P value Chi Square Test	
	Basic (	n=174)	Clinical	(n=188)			
	n	%	n	%	n	%	
Interested in improving							
No	63	36.2	59	31.4	122	33.7	0.332
Yes	111	63.8	129	68.6	240	66.3	
Enhance future career opportunities							
No	94	54.0	81	43.3	175	48.5	0.042*
Yes	80	46.0	106	56.7	186	51.5	
Increasing self confidence							
No	61	35.1	66	35.1	127	35.1	0.992
Yes	113	64.9	122	64.9	235	64.9	
To be more efficient							
No	79	45.4	93	49.5	172	47.5	0.439
Yes	95	54.6	95	50.5	190	52.5	
To get better grades							
No	74	42.5	95	50.5	169	46.7	0.127
Yes	100	57.5	93	49.5	193	53.3	
Other presentations of my colleagues seem better							
No	151	86.8	165	87.8	316	87.3	0.779
Yes	23	13.2	23	12.2	46	12.7	
I feel the audience seem bored during my presentation							
No	162	93.1	169	89.9	331	91.4	0.276
Yes	12	6.9	19	10.1	31	8.6	
Recommendation of trusted colleague							
No	155	89.1	162	86.2	317	87.6	0.402
Yes	19	10.9	26	13.8	45	12.4	
Recommendation from my tutors							
No	141	81.0	171	91.0	312	86.2	0.006*
Yes	33	19.0	17	9.0	50	13.8	
Total motivation score (0-9)							
Mean ± SD	3.4:	±1.8	3.3:	±1.7	3.4:	±1.7	0.938 <sup>a</sup>
95% Confidence interval of the mean	3.1-	-3.6	3.1-	3.59	3.1-	-3.5	
Median (IQR)	3(2	-5)	3(2	-5)	3(2	-5)	
Range	0-	-6	0-	-6	0-	-6	

Table 7 Motivation For Improving Presentation Skills Per Phase According to The Phase Among Study Participants

**Notes**: \*sig: p value < 0.05 a p value for Mann Whitney U-test.



Figure 2 Correlation between presentation and communication skills among study participants. The presentation scale is the sum of 5 questions with response to each question ranging from 1 to 10. Therefore, the total presentation scale ranges from 5 to 50. Barrier's scale is the sum of 10 questions with response to each question with no (0) or yes (1). Thus, the total motivation scale ranges from 0 to 10. Motivation scale is the sum of 9 questions with response to each question with no (0) or yes (1). Consequently, the total motivation scale ranges from 0 to 9. Teaching strategies impact scale is the sum of 2 questions with 5 Likert responses ranging from strongly disagree (1) to strongly agree (5). Therefore, the total teaching strategies impact scale ranges from 0 to 32.

# Summary of Qualitative Responses (FGDs)

Qualitative analysis revealed six interrelated but distinct themes: 1. High stress levels associated with presentation tasks pose a significant challenge, 2. Adapting to audience expectations is difficult; 3. Rehearsing under grading pressure motivates students to improve their presentation and communication skills; 4. Exposure to real-world scenarios, such as presenting cases in professional contexts or conferences, boosts confidence, 5. Role models inspire students to enhance their communication and presentation skills, and 6. While skills are improving, progress feels slow.

#### Theme (1): High Stress Levels Associated with Presentation Tasks is a Major Challenge

Students in the FGD reported feeling stressed and anxious before and during the presentation. They also reported worries when they are interacting with patients. This worry was echoed in their interactions with audiences, where similar feelings of apprehension surfaced. They believed their performance would improve if they could manage their anxiety.

"If I didn't feel so anxious, I know I could communicate my ideas more clearly."

#### Theme (2): Difficulty Adapting to Audience Expectations

Students struggled to adjust their language and presentation style to fit different audiences, particularly considering varying scientific and cultural backgrounds. Many found this uncertainty overwhelming.

"I find it hard to connect when I'm unsure of what the audience expects from me."

#### Theme (3): Grading Pressure Encourages Rehearsal and Skill Development

The pressure of being graded was identified as a motivating factor for students to practice and refine their presentation skills. Participants expressed that rehearsing under such pressure led to improved PowerPoint design and verbal delivery.

"Knowing that my grade depends on this pushes me to rehearse more and work on my delivery."



Figure 3 Correlation between presentation skills, barriers, motivations, and teaching strategies among study participants.



Figure 4 Correlation between communication skills, barriers, motivations, and teaching strategies among study participants.



Figure 5 Proportion of student's performance in the learning outcomes related to the presentation and communication skills according to the phase of the program.

#### Theme (4): Real-World Exposure Builds Confidence

Students reported that presenting in professional settings, such as presenting clinical cases or participating in conferences, significantly boosted their confidence. These experiences reinforce the importance of effective communication.

"Presenting at a conference made me realize how important it is to convey my thoughts clearly; it was a real confidence booster."

#### Theme (5): Role Model Is a Source of Inspiration

The influence of role models was identified as a key motivational factor for students striving to enhance their communication skills. Many participants looked up to their professors or healthcare professionals who demonstrated strong communication skills and desired to emulate these traits.

"Seeing my mentor communicates so effectively inspires me to work on my own skills because I want to be like them."

#### Theme (6): Progress in Communication Skills Feels Slow

While participants acknowledged that their presentation and communication skills improved, they also noted that this progress felt slow and gradual. They wished for faster, more noticeable advancements.

"I can see some improvement, but it feels like it takes forever to get to where I want to be."

"Seeing my mentor communicate so effectively inspires me to work on my own skills because I want to be like them."

## Discussion

The current study assessed the presentation and communication skills among medical students within an integrated curriculum, comparing students in the early and late phases of the program. In addition, the study explored the motivating and challenging factors influencing these skills development. Our findings suggest that the integrated curriculum offers

opportunities for enhancing communication and presentation skills early in the program. Similarly, Pfarrwaller et al reviewed age and career stages in medical education cohorts and emphasized that presentation and communication skills become critical for professional success during the early higher education stages.<sup>35</sup> Additionally, Erikson's Psychosocial Development Theory further supports that individual in this age group (20–25 years) benefit from developing strong communication skills, contributing to long-term cognitive and emotional well-being.<sup>36</sup> Therefore, students in our study across the basic and clinical phases, with a mean age of 23.3 years, demonstrated similar skill levels and positively perceived their presentation abilities. Notably, student-centered teaching strategies were particularly beneficial in fostering these skills despite some reported challenges.

More than half of the students enrolled in our study reported their preference for text-heavy slides over visuals like images, videos, and graphs, consistent with findings by Clarke et al.<sup>7</sup> However, prior research suggests that bullet-point-heavy PowerPoint slides often lead to passive learning and often reduce audience engagement.<sup>37,38</sup> According to Cognitive Load Theory, well-organized information supports learning by facilitating the transition from short- to long-term memory, but excessive bulleting hinders retention.<sup>39</sup> Therefore, Mayer's Multimedia Learning Theory further emphasizes combining textual and visual elements to improve engagement, highlighting a potential gap in training students to use multimedia effectively<sup>40</sup> Furthermore, eliminating bullets and using multimedia elements like images and videos can enhance learning through dual-channel processing. One approach to promoting visuals in communication is integrating relevant training into medical curricula, as students trained in digital tools incorporate visuals more effectively.<sup>41</sup>

Students in our study generally had a positive perception of their presentation skills, reporting a high level of comfort with technology (mean score: 8/10). This finding aligns with Cohen et al, who found that higher education students widely utilize technology.<sup>42</sup> However, observed variations in specific skill perception scores (ranging from 6.3 to 7.9) suggest room for targeted interventions, such as structured practice and rehearsal. The clinical case presentation is one of the most challenging tasks for future doctors. It requires synthesizing and conveying information clearly while telling the case story with insight and logical coherence. In a previous study, healthcare professionals rated themselves the lowest as storytellers.<sup>7</sup> In contrast, our study found that internship students better perceived themselves as storytellers. According to Kolb's Experiential Learning Theory, this finding reflects that their exposure to real-world experiences reinforces the "active experimentation" phase of learning.<sup>43</sup> Moreover, the observed positive correlation between storytelling and presentation effectiveness further highlights its role as a communication tool, consistent with previous finding.<sup>44</sup> The observed comparable perception of presentation and communication skills among students in the different phases of the program aligns with Basukala and Chaudhary, who reported that early-phase medical students often develop skills comparable to those of their clinical phase peers when exposed to structured training. Structured training is a core component of the integrated curricula.<sup>45</sup>

Non-verbal communication plays a critical role in audience engagement, a concept applicable beyond medical education. A confident physical presence is essential for effective public speaking.<sup>46</sup> Our study revealed that most students effectively used non-verbal communication, such as body language (67.4%) and eye contact (71.6%), which is consistent with the findings of previous research.<sup>47</sup> Furthermore, Clear voice modulation and pronunciation were also highlighted as key factors for professional communication, which was agreed upon earlier.<sup>48</sup>.

Our study yielded that few students reported low confidence and poor audience engagement; unlike prior research, most students felt unconfident and unable to engage the audience during presentations.<sup>49</sup> Although these findings were relatively rare, they indicate a need for targeted support. Bandura's Self-Efficacy Theory supports the notion that confidence in communication is shaped by prior successes and the perceived ability to perform effectively.<sup>50</sup> Therefore, the integrated curricula offer such opportunities earlier in the program than traditional learning methods.<sup>51</sup>

Our study showed that student-centered learning approaches such as PBL and CBL strategies effectively enhance presentation and communication skills, with more than one-third of students strongly agreeing with their positive impact. These findings align with prior research showing the noticeable impact of PBL in improving student's communication skills.<sup>52</sup> Constructivist Learning Theory supports the effectiveness of PBL and CBL, emphasizing active knowledge construction through problem-solving and collaboration.<sup>53</sup> Therefore, the more substantial agreement among clinical

phase students in our study may reflect the practical, real-world application emphasized in these strategies. In addition, early clinical exposure has been shown to enhance communication competencies, further validating these findings.<sup>54,55</sup>

Self-improvement and confidence-building emerged as primary drivers for skill development, with clinical phase students emphasizing career aspirations. This aligns with Deci and Ryan's Self-Determination Theory, which categorizes motivation into intrinsic (self-improvement) and extrinsic (career goals) factors.<sup>56</sup> Moreover, the stronger career-oriented motivation among clinical phase students likely reflects their proximity to professional practice.<sup>57</sup>

Key motivating factors for communication skill development reported in our study included participation in realworld experiences, such as conferences and clinical case discussions. These findings align with Kolb's experiential learning theory, which posits that learning is enhanced when individuals apply theoretical knowledge in real-world contexts.<sup>58</sup> Engaging in such professional settings builds confidence and reinforces the value of effective communication skills and transforms the students from a passive role in the classroom to a proactive role in realistic clinical practices. However, ensuring equitable access to these opportunities is essential.<sup>59</sup> Additionally, achieving high grades was also identified as another motivating factor for students. Literature supports the notion that external motivators, such as grades, can positively influence self-regulation and skill development in students.<sup>60,61</sup> Nevertheless, it was reported that the pressure to achieve higher grades emerged as a double-edged sword. While it incentivizes preparation and practice, it could also contribute to stress and burnout. Therefore, fostering intrinsic motivation by emphasizing the personal and professional importance of communication skills may yield longer-lasting improvements.<sup>62</sup>

The students in our study also identified the role models as an inspiration for enhancing their communication skills. This finding is consistent with previous findings that observing exemplary mentors encourages students to develop similar competencies. Role models provide a tangible benchmark for students to aspire to, and incorporating mentorship programs or inviting accomplished speakers could amplify this impact.<sup>63</sup> Formal mentorship programs are highly beneficial, promoting both communication skills and emotional well-being.<sup>64</sup> High-performing medical students report more engagement in formal mentoring programs. High-performing medical students tend to engage more in such programs, which provide valuable guidance for career planning and professional development.<sup>65.</sup>

On the other hand, the lack of preparation time was the most significant barrier identified by the students in the present study. This finding aligns with Khan and Salam, who stated that medical students often struggle with time management due to demanding curricula.<sup>66</sup> Interestingly, some commonly cited challenges in other studies, such as technical skills, language barriers, and lack of confidence, were less pronounced in our study.<sup>7</sup> However, stress and anxiety were frequently reported, consistent with findings on communication apprehension among health profession students.<sup>67</sup> Additionally, some students found it challenging to adapt their presentation styles to different audience expectations. Consistently, others emphasized the role of cultural and contextual differences in communication.<sup>68</sup> Therefore, understanding the audience and improving delivery skills can enhance audience perception. However, Quy and Bao, did not support this finding.<sup>46</sup>

It is noteworthy to mention other factors, not investigated in the current work, that influence the outcomes of the communication skills in medical students, particularly the timeframes and specific periods including pandemics. Moldovan et al mentioned that the COVID-19 pandemic negatively affects medical education, training, and the mental well-being of orthopedic resident doctors. They advised adopting electronic educational portfolios, simulation of surgical processes, and distance learning as alternative learning strategies. These measures will mitigate the pandemic associated stress and promote sense of well- being among healthcare practitioners.<sup>69</sup>

Overall, our findings confirm a positive correlation between presentation and communication skills, reinforcing their interdependence and supporting the existing evidence that communication is integral to effective presentations.<sup>70</sup> Furthermore, the negative correlation between reported barriers and performance supports the idea that reducing obstacles enhances learning outcomes.<sup>71</sup> These results highlight the importance of integrating modern teaching strategies, addressing time management challenges, and fostering mentorship to support students in achieving professional competency. By aligning educational interventions with experiential and constructivist learning theories, medical education can better prepare students for successful careers.

# Limitations

The social desirability bias is an inherent limitation of the present study owing to relying on self-reported measures. We recommend conducting future studies adopting additive objective measurements such as students' performances and independent evaluator opinions.

# Conclusion

The current study revealed that the integrated curriculum offers opportunities for enhancing communication and presentation skills early in the program, where the student's self-perception of the current presentation designs and styles were comparable among junior and senior students. Likewise, medical students practiced and well-perceived communication skills at all levels. Students perceived the PBL and CBL positively and thought they positively influenced their communication and presentation skills. The main challenges medical students reported were the time constraints and the need for training and practice. Other reported challenges were the high stress levels associated with presentation tasks and adaptation to audience expectations. The most motivating factors were the interest in improvement, aim to increase self-confidence, desire to enhance future career opportunities, be more efficient, and obtain high grades. Other motivations were exposure to real-world scenarios, like presenting cases in professional contexts or conferences, and the presence of role models. However, while students agreed that their skills are improving, this progress feels slow. Clinical phase students performed significantly better in four key objectives: effective counseling skills, reporting concurrent physical, social, or mental conditions affecting patient care, sensitively and effectively breaking bad news, and recognizing and managing conflicts of interest. Basic science phase students, however, outperformed their clinical phase counterparts in recognizing the importance of teamwork.

# **Abbreviations**

CBL; case-based learning, CI; confidence interval, COM; College of Medicine, CVI; content validity index, CVR; content validity ratio, DAU; Dar al Uloom University, FGD; focus group discussions, ILOs; intended learning outcomes, IRB; institutional review board, OSCE; objective structured clinical examinations, OSPE; objective structured practical examinations, PBL; problem-based learning, PjBL; project-based learning, SPs; simulated patients, UPP; university preparation program.

# **Institutional Review Board Statement**

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of College of Medicine, Dar Al-Uloom University, Riyadh, Saudi Arabia (protocol code Pro22030010).

# **Data Sharing Statement**

The data analyzed in the current study are available upon reasonable request from the corresponding author.

# **Informed Consent Statement**

Written informed consent was obtained from every participant prior to their inclusion in the current study.

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# **Author Contributions**

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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