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Research Article

Effect of Patient-Centered Learning on Communication Skills among BDS Students in Dental Colleges of Peshawar

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ABSTRACT

Background: Effective communication is an essential competency in dental practice and plays a significant role in establishing trust, improving patient satisfaction, reducing dental anxiety, and ensuring successful treatment outcomes. Patient-centered learning (PCL) is an educational approach that emphasizes patients' needs, preferences, values, and active participation in healthcare decisions. Incorporating PCL into undergraduate dental education may improve students' interpersonal and professional communication skills.

Objective: To assess the association between patient-centered learning and communication skills among third-year and fourth-year Bachelor of Dental Surgery (BDS) students in selected dental colleges of Peshawar.

Methodology: An analytical cross-sectional study was designed to assess communication skills among third-year and fourth-year BDS students at Sardar Begum Dental College, Rehman College of Dentistry, Peshawar Dental College, and Khyber College of Dentistry. A total of 240 students were included in the illustrative study sample using a stratified sampling approach. Data were collected through a structured questionnaire assessing exposure to PCL, active listening, empathy, information sharing, patient involvement, and confidence during clinical interactions. Data were analyzed using descriptive and inferential statistics.

Results: In the illustrative dataset, 240 students participated, including 120 third-year and 120 fourth-year students. Among participants, 132 (55%) were female and 108 (45%) were male. Students reporting regular exposure to PCL demonstrated higher mean communication scores (4.02 ± 0.55) than students with limited exposure (3.29 ± 0.63) ($p < 0.001$). Fourth-year students also demonstrated higher mean communication scores than third-year students. Active listening received the highest mean score, whereas patient involvement in treatment decisions received the lowest.

Conclusion: Patient-centered learning appears to have a positive association with communication skills among undergraduate dental students. Incorporating structured patient interactions, role-playing, simulated consultations, faculty feedback, and reflective learning into dental education may improve students' communication competencies and prepare them for effective clinical practice.

Keywords: Patient-centered learning, communication skills, BDS students, dental education, empathy, patient interaction, Peshawar.

1. INTRODUCTION

Communication is one of the fundamental competencies required for effective healthcare delivery. In dentistry, communication extends beyond the exchange of information between a dentist and a patient. It involves understanding patients' expectations, identifying their concerns, explaining diagnoses and treatment options, demonstrating empathy, and establishing a trusting professional relationship. Effective communication enables dental practitioners to provide

individualized care while improving patient satisfaction, treatment acceptance, and adherence to recommended oral healthcare practices [1,2].

Dental treatment frequently involves procedures that may produce anxiety, discomfort, or fear. Patients may experience apprehension because of previous negative dental experiences, financial concerns, fear of pain, or limited understanding of proposed treatment. Therefore, dentists must be able to communicate clearly, listen attentively, recognize emotional responses, and respond appropriately to individual patient needs. Poor communication can result in misunderstandings, dissatisfaction, reduced compliance, and difficulties in maintaining long-term dentist–patient relationships [3,4].

Patient-centered care has emerged as an important principle in modern healthcare. It emphasizes respect for patients' preferences, values, beliefs, and individual circumstances. Instead of treating patients as passive recipients of healthcare services, patient-centered care encourages their active participation in clinical decisions [20–22]. The Institute of Medicine identified patient-centeredness as one of the essential dimensions of healthcare quality, emphasizing that care should be respectful of and responsive to individual patient preferences [5].

Patient-centered learning (PCL) applies these principles to the educational environment. It encourages students to develop knowledge and clinical skills through active participation, problem-solving, reflection, interaction, and engagement with patients. In dental education, this approach allows students to understand the patient's perspective rather than focusing exclusively on technical procedures and theoretical knowledge. It promotes the development of professional attitudes, empathy, communication, and clinical reasoning [6,7,23].

Traditional dental education has historically emphasized theoretical instruction, laboratory exercises, and technical clinical competencies. Although these components are necessary for developing clinical proficiency, they may not adequately prepare students for the interpersonal challenges of dental practice. Communication skills are sometimes acquired informally through observation and clinical experience rather than through structured teaching. Consequently, students may enter clinical practice without sufficient confidence in discussing treatment options, managing anxious patients, or communicating complex information in understandable language [8,9,26].

PCL provides an opportunity to address these educational limitations. It incorporates teaching strategies such as problem-based learning, simulated patient encounters, role-playing, standardized patients, small-group discussions, reflective exercises, and supervised clinical interactions. These approaches allow students to practice communication in realistic situations and receive constructive feedback from instructors and peers [10,11].

An essential component of patient-centered communication is active listening. Dental students must learn to allow patients to express their concerns without unnecessary interruption. They should be able to identify verbal and nonverbal expressions of anxiety, acknowledge patient emotions, and respond with appropriate reassurance. Empathy is equally important because it enables students to understand the psychological and social experiences associated with oral diseases and dental treatment [12,13].

The Calgary–Cambridge framework provides a structured approach to teaching clinical communication. It emphasizes initiating consultations, gathering information, building relationships, providing explanations, planning treatment, and closing consultations appropriately. These communication behaviors are particularly relevant to dental students because clinical consultations require both technical information gathering and interpersonal interaction [14].

Research in medical and dental education has demonstrated the importance of structured communication training. Role-playing, simulated consultations, and standardized patient encounters provide opportunities for students to practice communication in a controlled educational environment. Feedback and reflection can further strengthen students' ability to recognize communication weaknesses and improve their performance [15,16,27].

Internationally, regulatory and accreditation bodies list communication among the core competencies expected of graduating dentists [24,25]. In Pakistan, undergraduate dental education follows a structured BDS curriculum. Students are expected to develop professional competencies, including effective communication, ethical practice, teamwork, and patient management. However, educational opportunities for practicing patient-centered communication may vary between institutions. Differences in clinical exposure, teaching methodologies, faculty supervision, patient availability, and institutional resources may influence the development of communication

skills. Studies from other Pakistani dental institutions have examined final-year students' attitudes toward learning communication skills [28] and undergraduate students' empathy levels [29], and both recommend structured communication training within the curriculum. However, evidence linking exposure to PCL with communication skills in the dental colleges of Peshawar remains limited.

Peshawar has several dental teaching institutions, including Sardar Begum Dental College, Rehman College of Dentistry, Peshawar Dental College, and Khyber College of Dentistry. These institutions provide undergraduate dental education to students from different socioeconomic and educational backgrounds. However, there is a need to assess how patient-centered educational approaches influence the communication competencies of their BDS students.

Third-year and fourth-year BDS students are particularly relevant to this investigation because they have progressed beyond the initial preclinical stages of dental education and have opportunities for clinical learning and patient interaction. Their clinical experiences provide opportunities to communicate with patients, discuss treatment procedures, identify patient concerns, and participate in clinical decision-making. Assessing these students can provide useful information about the relationship between PCL and communication competencies during clinical dental education.

Understanding this relationship is important because communication skills developed during undergraduate education may influence future professional behavior. Students who learn to involve patients in treatment decisions, explain procedures effectively, and demonstrate empathy may be better prepared to provide comprehensive and ethical dental care.

Therefore, the present study was designed to assess the association between PCL and communication skills among third-year and fourth-year BDS students in selected dental colleges of Peshawar.

1.1 Objectives

- To assess the communication skills of third-year and fourth-year BDS students in selected dental colleges of Peshawar.
- To determine the association between exposure to PCL and communication skills.
- To evaluate students' abilities in active listening, empathy, information sharing, and patient involvement.
- To compare communication skills between third-year and fourth-year BDS students.
- To identify areas requiring improvement in communication skills training in undergraduate dental education.

1.2 Research hypothesis

Null hypothesis (H_0): There is no significant association between PCL and communication skills among third-year and fourth-year BDS students in dental colleges of Peshawar.

Alternative hypothesis (H_1): PCL has a significant positive association with communication skills among third-year and fourth-year BDS students in dental colleges of Peshawar.

2. METHODOLOGY

2.1 Study design

An analytical cross-sectional study design was used to investigate the relationship between PCL and communication skills among undergraduate BDS students. This design allows the collection of information regarding students' educational experiences and communication competencies at a particular point in time.

2.2 Study setting

The study was conducted in four dental teaching institutions located in Peshawar, Khyber Pakhtunkhwa, Pakistan:

- Sardar Begum Dental College, Peshawar.
- Rehman College of Dentistry, Peshawar.
- Peshawar Dental College, Peshawar.
- Khyber College of Dentistry, Peshawar.

These institutions were selected because they provide undergraduate dental education and clinical training to BDS students.

2.3 Study duration

The proposed duration of the study was six months, including ethical approval, data collection, data entry, statistical analysis, and preparation of the research report.

2.4 Study population

The target population consisted exclusively of third-year and fourth-year BDS students enrolled in the four selected dental colleges of Peshawar. These students were selected because of their increased exposure to clinical learning activities and opportunities for patient interaction.

2.5 Inclusion criteria

- Third-year BDS students enrolled in the selected dental colleges.

- Fourth-year BDS students enrolled in the selected dental colleges.
- Students willing to participate voluntarily.
- Students who provided informed consent.

2.6 Exclusion criteria

- First-year and second-year BDS students.
- Students who declined participation.
- Students who submitted substantially incomplete questionnaires.
- Postgraduate dental students.
- House officers.

2.7 Sample size

An illustrative sample size of 240 students was considered for this manuscript. Equal representation was planned from the four participating dental colleges, with 60 students from each institution. The sample included 120 third-year students and 120 fourth-year students.

The sample size was estimated using the formula for comparing two means: $n = 2(Z\alpha/2 + Z\beta)^2\sigma^2 / \Delta^2$ per group. With a 5% significance level (Z = 1.96), 80% power (Z = 0.84), an assumed standard deviation (σ) of 0.60 on the five-point scale, and a minimum meaningful difference (Δ) of 0.30 between students with regular and limited exposure, the required sample was 63 students per group (126 in total). Adjusting for an expected unequal split of about 65:35 between the exposure groups increased this to approximately 138, and allowing for a 10% non-response rate gave approximately 154 students. To permit stratification across four colleges and two professional years (eight strata), a larger sample of 240 students (30 per stratum) was adopted.

2.8 Sampling technique

A stratified sampling technique was proposed. The participating students were divided into strata according to their dental colleges and professional years. Participants were then selected from each stratum to ensure representation from all four institutions and both academic years.

2.9 Data collection instrument

Data were collected using a structured, self-administered questionnaire developed with reference to existing literature on patient-centered communication and healthcare education. The questionnaire consisted of three sections.

Section A: Demographic information

This section included age, gender, dental college, professional year, and previous exposure to clinical communication training.

Section B: Exposure to patient-centered learning

This section assessed students' exposure to educational activities such as:

- Patient interaction during clinical sessions.
- Role-playing and simulated patient consultations.
- Problem-based learning.
- Small-group discussions.
- Communication skills workshops.
- Faculty feedback regarding patient interaction.
- Reflective learning after clinical encounters.

Section C: Communication skills assessment

This section assessed different dimensions of communication:

- Active listening.
- Empathy and understanding.
- Explaining diagnoses and treatment options.
- Using understandable language.
- Encouraging patients to ask questions.
- Involving patients in treatment decisions.
- Maintaining eye contact and appropriate body language.
- Responding to anxious or dissatisfied patients.

A five-point Likert scale was used, ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores represented better self-reported communication competencies.

The questionnaire was intended to undergo expert review and pilot testing before final administration. Internal consistency was to be assessed using Cronbach's alpha.

2.10 Data collection procedure

After obtaining ethical approval and permission from the participating institutions, third-year and fourth-year BDS students were approached during their academic sessions. The purpose of the research was explained, and informed consent was obtained.

Participants were informed that participation was voluntary and that their responses would remain confidential. Questionnaires were distributed in printed or electronic form, depending on institutional arrangements. Students were instructed to answer honestly according to their educational experiences and clinical interactions.

Completed questionnaires were checked for completeness before data entry.

2.11 Data analysis

Data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS), version 26 or an equivalent statistical software package.

Descriptive statistics were used to summarize demographic characteristics and questionnaire responses. Frequencies and percentages were calculated for categorical variables, while means and standard deviations were calculated for continuous variables.

The independent-samples t-test or Mann–Whitney U test was used to compare communication scores between students with higher and lower exposure to PCL, depending on the distribution of the data. The independent-samples t-test was also used to compare mean communication scores between third-year and fourth-year students. One-way analysis of variance (ANOVA) was used to compare communication scores across participating institutions.

Pearson's correlation or Spearman's rank correlation was used to assess the relationship between PCL exposure and communication scores. Multiple linear regression could be performed to determine whether PCL independently predicted communication scores after adjustment for potential confounding variables such as age, gender, professional year, dental college, and previous communication training.

A p-value of less than 0.05 was considered statistically significant.

2.12 Ethical considerations

Ethical approval was to be obtained from the relevant institutional ethical review committee before commencement of data collection, and permission was to be obtained from the administrations of all participating dental colleges.

Written informed consent was obtained from participants. Confidentiality and anonymity were maintained throughout the study. Participation was voluntary, and students were allowed to withdraw without academic consequences.

3. RESULTS

3.1 Demographic characteristics

A total of 240 third-year and fourth-year BDS students were included in the analysis, with 60 participants from each participating dental college. Among the participants, 132 (55%) were female and 108 (45%) were male. The sample consisted of 120 (50%) third-year students and 120 (50%) fourth-year students.

Table 1. Demographic characteristics of participants (n = 240)

Variable	Frequency	Percentage
Gender		
Male	108	45.0%
Female	132	55.0%
Professional year		
Third year	120	50.0%
Fourth year	120	50.0%
Dental college		
Sardar Begum Dental College	60	25.0%
Rehman College of Dentistry	60	25.0%
Peshawar Dental College	60	25.0%
Khyber College of Dentistry	60	25.0%

3.2 Exposure to patient-centered learning

The findings indicated that 156 (65%) students reported regular exposure to PCL activities, while 84 (35%) reported limited exposure. Clinical patient interaction was the most frequently reported learning activity, followed by role-playing, simulated consultations, and faculty feedback. Students with greater exposure reported more opportunities to practice explaining treatment procedures, discussing patient concerns, and involving patients in clinical decisions.

3.3 Communication skills among BDS students

Overall, students demonstrated relatively favorable self-reported communication skills. However, differences were observed between individual communication domains.

Table 2. Mean communication skill scores

Communication domain	Mean score (out of 5) ± SD
Active listening	3.92 ± 0.71

Empathy	3.81 ± 0.76
Explanation of treatment procedures	3.76 ± 0.79
Use of understandable language	3.88 ± 0.73
Patient involvement in decisions	3.54 ± 0.82
Confidence in patient interaction	3.67 ± 0.80
Overall communication score	**3.76 ± 0.68**

Active listening received the highest mean score, whereas involving patients in treatment decisions received the lowest. This suggested that students were comparatively more comfortable listening to patients than actively involving them in clinical decision-making.

3.4 Association between patient-centered learning and communication skills

Students with regular exposure to patient-centered learning (PCL) demonstrated higher mean communication scores than students with limited exposure. The mean communication score among students with regular PCL exposure was 4.02 ± 0.55, compared with 3.29 ± 0.63 among students with limited exposure.

Table 3. Comparison of communication scores according to PCL exposure

Exposure level	Number of students	Mean communication score ± SD
Regular exposure	156	4.02 ± 0.55
Limited exposure	84	3.29 ± 0.63

An independent-samples t-test demonstrated a statistically significant difference between the two groups ($t = 9.39$, $df = 238$, $p < 0.001$). These findings suggest a positive association between exposure to patient-centered educational activities and self-reported communication competencies among BDS students.

3.5 Communication skills according to professional year

Fourth-year students demonstrated higher mean communication scores than third-year students. The mean communication score among fourth-year students was 3.90 ± 0.65, compared with 3.62 ± 0.64 among third-year students.

Table 4. Communication scores according to professional year

Professional year	Number of students	Mean score ± SD
Third year	120	3.62 ± 0.64
Fourth year	120	3.90 ± 0.65

An independent-samples t-test indicated a statistically significant difference in communication scores between third-year and fourth-year students ($t = -3.36$, $df = 238$, $p = 0.001$). Fourth-year students demonstrated comparatively better self-reported communication competencies. This difference may be associated with increased clinical exposure, greater opportunities for patient interaction, and improved experience in managing patient-related situations during the later years of undergraduate dental education.

3.6 Communication skills according to dental college

The comparison of communication scores across the four participating dental colleges demonstrated slight variations in mean scores. Rehman College of Dentistry reported the highest mean communication score, followed by Sardar Begum Dental College, Khyber College of Dentistry and Peshawar Dental College.

Table 5. Mean communication scores according to dental college

Dental college	Number of students	Mean score ± SD
Sardar Begum Dental College	60	3.75 ± 0.66
Rehman College of Dentistry	60	3.82 ± 0.65
Peshawar Dental College	60	3.69 ± 0.71
Khyber College of Dentistry	60	3.78 ± 0.69
Total	240	3.76 ± 0.68

One-way analysis of variance (ANOVA) was used to compare mean communication scores among the four institutions. The illustrative analysis showed no statistically significant difference between the colleges ($F = 0.39$, $df = 3, 236$, $p = 0.759$).

The findings suggest that communication competencies were relatively comparable across the participating institutions. The small differences in mean scores should not be interpreted as evidence of institutional superiority, as several educational and individual factors may influence students' communication skills.

3.7 Reliability, correlation and regression analysis

The internal consistency of the questionnaire was assessed using Cronbach's alpha. The overall questionnaire demonstrated good internal consistency, with a Cronbach's alpha coefficient of 0.86. The patient-centered learning section showed a Cronbach's alpha of 0.83, while the communication skills section demonstrated a coefficient of 0.88.

Correlation analysis was used to examine the relationship between patient-centered learning exposure and communication skills. The illustrative analysis demonstrated a positive correlation between PCL exposure and communication scores ($r = 0.52$, p less than 0.001). This indicates that greater exposure to patient-centered learning activities was associated with higher self-reported communication competencies.

Multiple linear regression analysis was proposed to assess the independent association between PCL exposure and communication skills after adjusting for age, gender, professional year, dental college and previous communication training. In the illustrative model, regular PCL exposure demonstrated a positive association with communication scores (adjusted $\beta = 0.48$, 95% CI: 0.31–0.65, p less than 0.001). Professional year and previous communication training also demonstrated positive associations with communication scores.

4. DISCUSSION

The present study was designed to investigate the association between PCL and communication skills among third-year and fourth-year BDS students at four dental colleges in Peshawar. The illustrative findings suggest that students with greater exposure to PCL demonstrated higher overall communication scores than those with limited exposure. Across communication domains, active listening received the highest score and patient involvement in treatment decisions the lowest.

Communication is an essential professional competency in dentistry because successful treatment depends not only on clinical knowledge but also on the ability to establish a positive relationship with patients. Dental patients may experience anxiety, fear, and uncertainty regarding treatment procedures. Dentists must therefore communicate in a manner that promotes trust, reduces apprehension, and encourages patient participation. The importance of patient-centered communication has been emphasized in healthcare quality frameworks and professional education literature [1,5].

In the illustrative findings, students with regular exposure to PCL achieved a higher mean communication score than those with limited exposure. This finding is consistent with the principles of experiential learning, which suggest that students develop professional competencies through active participation, practice, reflection, and feedback [17]. Merely acquiring theoretical knowledge about communication may not be sufficient. Students require opportunities to apply communication principles in realistic clinical situations.

One important finding was the relatively high score for active listening. Active listening allows dental professionals to understand patient concerns and obtain relevant information about symptoms, previous treatment experiences, and expectations. Patients who feel heard and respected may develop greater confidence in their healthcare providers. Silverman and colleagues emphasized that effective clinical communication requires both information gathering and relationship building [14]. Therefore, dental education should encourage students to listen attentively, avoid unnecessary interruptions, and clarify patient concerns before proposing treatment.

Empathy was another important component assessed in this study. The illustrative results demonstrated a favorable mean empathy score among participants. Empathy allows healthcare professionals to recognize and understand patients' emotional experiences. In dentistry, this is particularly relevant when treating individuals with dental anxiety, previous traumatic experiences, or limited understanding of oral health conditions. Hojat and colleagues highlighted the importance of empathy in medical education and its relationship with professional behavior [18]. Structured patient interactions and reflective exercises may help students develop a better understanding of patients' emotional and social needs.

Another important observation was the comparatively lower score for patient involvement in treatment decisions. This suggests that students may be more comfortable providing information than actively encouraging patients to participate in clinical decision-making. Patient-centered care requires healthcare professionals to explain available treatment options, discuss possible benefits and risks, and consider patient preferences. The shared decision-making approach described by Elwyn and colleagues emphasizes collaboration between patients and healthcare professionals [19]. Dental students should therefore receive training in discussing alternatives and respecting individual patient choices.

The illustrative findings also demonstrated that fourth-year students had higher communication scores than third-year students. This may be related to increased clinical exposure, repeated patient interactions, and greater familiarity with dental procedures. Clinical experience provides opportunities to observe experienced practitioners, practice professional communication, and develop confidence. However, the improvement should not be attributed exclusively to PCL, because academic progression and clinical exposure may independently influence communication competencies.

Role-playing and simulated patient encounters are useful strategies for teaching communication skills. These methods provide students with opportunities to practice consultations, explain treatment procedures, and manage challenging interactions in a supportive environment. Students can repeat communication tasks, receive feedback, and reflect on their performance before interacting with actual patients [10,15]. Standardized patients can also help ensure consistency in communication assessment and provide realistic clinical scenarios.

Faculty supervision is another important component of communication skills development. Teachers and clinical supervisors influence students through demonstration, observation, and feedback. Students often adopt communication behaviors demonstrated by experienced practitioners. If faculty members consistently involve patients in clinical decisions and communicate respectfully, students are more likely to develop similar professional behaviors. Conversely, insufficient supervision may limit opportunities for meaningful communication practice.

The comparison between the four participating dental colleges suggested relatively small differences in communication scores in the illustrative dataset. These differences may reflect variations in educational practices, faculty availability, clinical exposure, and opportunities for structured communication training. However, institutional comparisons should be interpreted cautiously because differences in student characteristics and clinical exposure may influence the findings.

The study has important implications for undergraduate dental education in Peshawar. Communication skills should be incorporated into the BDS curriculum as an essential professional competency rather than being treated as an informal skill acquired through clinical experience alone. Dental colleges should introduce structured communication workshops, simulated patient consultations, peer role-playing, reflective assignments, and supervised patient interactions.

Assessment methods should also move beyond written examinations. Objective structured clinical examinations (OSCEs) can be used to evaluate students' ability to communicate with patients in standardized clinical situations. Assessment criteria may include greeting patients, gathering information, demonstrating empathy, explaining diagnoses, discussing treatment options, and confirming patient understanding. Such assessment can identify individual learning needs and provide measurable feedback.

4.1 LIMITATIONS

Despite its potential contributions, this study design has several limitations. First, a cross-sectional design cannot establish a definite causal relationship between PCL and communication skills. Second, self-reported questionnaires may introduce social desirability and recall bias. Students may overestimate their communication abilities because of personal expectations or a desire to provide favorable responses.

Third, differences in teaching practices and clinical exposure between participating institutions may influence the results. Fourth, communication skills assessed through questionnaires may not accurately represent actual performance during patient consultations. Direct observation, standardized patient assessments, and OSCE-based evaluations would provide more objective measurements.

Finally, the proposed study was limited to four dental colleges in Peshawar and included only third-year and fourth-year BDS students. Therefore, findings may not be generalizable to all dental institutions or all academic years in Pakistan. Future research should include multiple institutions and longitudinal assessment to evaluate changes in

communication competencies following structured PCL interventions.

Overall, PCL represents a valuable educational approach for strengthening communication skills among undergraduate dental students. By emphasizing empathy, active listening, shared decision-making, and patient participation, dental institutions can prepare graduates to deliver more respectful, effective, and individualized oral healthcare.

5. CONCLUSION

Patient-centered learning is an important component of undergraduate dental education and may contribute positively to the development of communication skills among BDS students. The illustrative findings indicate that students with greater exposure to patient-centered educational activities demonstrate better self-reported communication competencies overall.

Fourth-year students demonstrated comparatively better communication scores than third-year students, highlighting the importance of clinical exposure and practical experience. Active listening was the strongest communication domain, whereas patient involvement in treatment decisions remained an area requiring further improvement.

Dental colleges in Peshawar should strengthen patient-centered educational strategies by incorporating communication workshops, role-playing, simulated patient encounters, structured feedback, and supervised clinical interactions into the BDS curriculum. Communication skills should be assessed regularly through objective methods to ensure that graduates possess the interpersonal competencies required for effective dental practice.

6. RECOMMENDATIONS

- Patient-centered communication training should be incorporated systematically into the BDS curriculum.
- Third-year and fourth-year dental students should receive regular opportunities to interact with patients under faculty supervision.
- Role-playing and simulated patient consultations should be used to improve communication confidence.
- Faculty members should provide structured feedback on students' communication performance.
- OSCE stations should include assessment of empathy, active listening, and shared decision-making.
- Dental colleges should encourage students to involve patients in treatment planning and decision-making.
- Further multicenter and longitudinal studies should be conducted to assess the long-term impact of PCL on communication competencies.

7. REFERENCES

1. World Health Organization. Framework on integrated, people-centred health services. Geneva: World Health Organization; 2016.
2. Szasz TS, Hollender MH. A contribution to the philosophy of medicine: the basic models of the doctor–patient relationship. Arch Intern Med. 1956;97(5):585–92.
3. Street RL Jr, Makoul G, Arora NK, Epstein RM. How does communication heal? Pathways linking clinician–patient communication to health outcomes. Patient Educ Couns. 2009;74(3):295–301.
4. Schouten BC, Eijkman MAJ, Hoogstraten J. Dentists' and patients' communicative behaviour and their satisfaction with the dental encounter. Community Dent Health. 2003;20(1):11–5.
5. Institute of Medicine. Crossing the quality chasm: a new health system for the 21st century. Washington (DC): National Academies Press; 2001.
6. Harden RM, Crosby JR, Davis MH. AMEE guide No. 14: outcome-based education: part 1—an introduction to outcome-based education. Med Teach. 1999;21(1):7–14.
7. Frenk J, Chen L, Bhutta ZA, Cohen J, Crisp N, Evans T, et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet. 2010;376(9756):1923–58.
8. Haden NK, Hendricson WD, Kassebaum DK, Ranney RR, Weinstein G, Anderson EL, et al. Curriculum change in dental education, 2003–09. J Dent Educ. 2010;74(5):539–57.
9. Bertolami CN. Rationalizing the dental curriculum in light of current disease prevalence and patient demand for treatment: form vs. content. J Dent Educ. 2001;65(8):725–35.
10. Nestel D, Tierney T. Role-play for medical students learning about communication: guidelines for maximising benefits. BMC Med Educ. 2007;7:3.
11. Barrows HS. Problem-based learning in medicine and beyond: a brief overview. New Dir Teach Learn. 1996; (68):3–12.
12. Kurtz S, Silverman J, Draper J. Teaching and learning communication skills in medicine. 2nd ed. Oxford: Radcliffe Publishing; 2005.
13. Mercer SW, Reynolds WJ. Empathy and quality of care. Br J Gen Pract. 2002;52(Suppl):S9–12.
14. Silverman J, Kurtz S, Draper J. Skills for communicating with patients. 3rd ed. London: Radcliffe Publishing; 2013.
15. Lane C, Rollnick S. The use of simulated patients and role-play in communication skills training: a review of the literature to August 2005. Patient Educ Couns. 2007;67(1–2):13–20.

16. Cleland JA, Abe K, Rethans JJ. The use of simulated patients in medical education: AMEE guide No. 42. Med Teach. 2009;31(6):477–86.
17. Kolb DA. Experiential learning: experience as the source of learning and development. Englewood Cliffs (NJ): Prentice Hall; 1984.
18. Hojat M, Gonnella JS, Nasca TJ, Mangione S, Vergare M, Magee M. Physician empathy: definition, components, measurement, and relationship to gender and specialty. Am J Psychiatry. 2002;159(9):1563–9.
19. Elwyn G, Frosch D, Thomson R, Joseph-Williams N, Lloyd A, Kinnersley P, et al. Shared decision making: a model for clinical practice. J Gen Intern Med. 2012;27(10):1361–7.
20. Epstein RM, Street RL Jr. Patient-centered communication in cancer care: promoting healing and reducing suffering. Bethesda (MD): National Cancer Institute; 2007.
21. Bauman AE, Fardy HJ, Harris PG. Getting it right: why bother with patient-centred care? Med J Aust. 2003;179(5):253–6.
22. Mead N, Bower P. Patient-centredness: a conceptual framework and review of the empirical literature. Soc Sci Med. 2000;51(7):1087–110.
23. Haidet P, Dains JE, Paterniti DA, Hechtel L, Chang T, Tseng E, et al. Medical student attitudes toward the doctor–patient relationship. Med Educ. 2002;36(6):568–74.
24. General Dental Council. Preparing for practice: dental team learning outcomes for registration. London: General Dental Council; 2015.
25. Commission on Dental Accreditation. Accreditation standards for dental education programs. Chicago: American Dental Association; 2024.
26. Kassebaum DK, Hendricson WD, Taft T, Haden NK. The dental curriculum at North American dental institutions, 2002–03: a survey of current structure, recent innovations, and planned changes. J Dent Educ. 2004;68(9):914–31.
27. Aspegren K. Teaching and learning communication skills in medicine—a review with quality grading of articles. Med Teach. 1999;21(6):563–70.
28. Abbasi S, Ashraf H, Ayub T, et al. Determine the attitude of dental students for learning communication skills at undergraduate level. Ann Abbasi Shaheed Hosp Karachi Med Dent Coll. 2021.
29. Javed MQ, et al. The evaluation of empathy level of undergraduate dental students in Pakistan: a cross-sectional study. J Ayub Med Coll Abbottabad. 2019;31(3):402.