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Evaluating Curriculum Gaps and Innovations in Teaching Cultural Competence to Future Medical Professionals

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ABSTRACT

Background: Cultural competence is the key to democratic and patient-centered treatment, yet there is no formal education on it in Pakistani medical schools. This study aimed to identify the gaps in cultural competence education among residents and medical students and also to evaluate the effectiveness of interactive teaching methodologies.

Methods: The cross-sectional study was conducted with the help of a questionnaire with 120 participants (85 students and 35 residents) who responded to a self-assessment questionnaire concerning their knowledge, attitudes, skills, and preferences in teaching. Sixty individuals attended an interactive educational intervention based on case-based discussions and role-playing. SPSS version 26.0 was used (significant as $p < 0.05$).

Results: Out of 120 participants, 34 (28%) reported prior formal cultural competence training. Self-reported scores of recognizing implicit bias (students: 2.9 ± 1.1, residents: 3.7 ± 1.3), using cultural knowledge (3.3 ± 1.2 vs 4.0 ± 1.5), and structural (3.3 ± 1.2 vs 4.0 ± 1.5), and structural competency (2.6 ± 1.0 vs 3.3 ± 1.2) were low, with the highest scores in all categories being rated by residents ($p < 0.05$). The results of the analysis of 60 participants that was performed post-intervention indicated that everything had become much better ($p < 0.001$). Blended learning, which included lectures and interactive workshops, 102 participants (85%), followed by interactive workshops, 42 participants (35%), and lectures, 18 participants (15%), was the most popular and yielded the lowest results ($p = 0.001$).

Conclusion: Formal cultural competence education is lacking among Pakistani medical students and residents. Interactive, case-based teaching significantly improves self-reported competency scores. Integrating blended learning methods into the core medical curriculum is essential to prepare future physicians for culturally responsive, patient-centered care.

Keywords: Cultural Competence, Medical Education, Curriculum gaps, Teaching Methods, Medical Residents.

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INTRODUCTION

The emergence of cultural competence is an essential part of the contemporary healthcare education that influences the capacity of the future healthcare professionals to provide unbiased, patient-centered care in the various sociocultural contexts [1]. The trend in international medical education is to include cultural sensitivity and cultural skills in communication as a way of decreasing the occurrence of health disparities, and fostering trust with patients and improving clinical outcomes [2].

The conventional medical training has mostly been focused on the biological and technical expertise, and there has been limited systemic exposure to the cultural side of healthcare practice[3]. Despite curricular programs such as integration of community-based rotations and ethics courses, the transformation of cultural awareness into quantifiable abilities has been fluctuating across institutions[4].

The modern educational paradigm highlights the importance of reflective learning, experiential learning, and simulation-oriented pedagogy as the means to build cultural competency [5]. Nonetheless, there is an extensive gap in the process of incorporating these new methods with the underlying curricular objectives and assessment systems [6]. Various reports have found a lack of standardized assessment structures, insufficient teacher education and interprofessional cooperation in the delivery of culturally aware education [7]. Also, differences in sociocultural dynamics, institutional priorities, and resource distribution in the region interfere in the establishment of an integrated educational system [8]. This contradiction indicates the importance of a thorough evaluation of the content of curricula, teaching strategies, and student outcomes to identify current gaps and make evidence-based changes [9].

The objectives of the study were to evaluate current curricular models and teaching approaches in cultural competence education among medical students and residents. It was aimed to define the existing gaps in education, assess the effectiveness of innovative teaching methods, and provide some implementation recommendations in improving cultural competency training in medical education.

METHODS

This was a cross-sectional, questionnaire-based study carried out in Superior University, Avicenna Medical College, Bolan Medical College, Pakistan, between October and December 2024 (Ref: 10/24/RS-3510) after informed consent. The sample size (N=120) was determined by using the OpenEpi software (Atlanta, Georgia, USA) with 95% confidence level and a margin of error 10 of

5% [10]. One hundred and twenty participants were recruited, including 85 third- and fourth-year medical students and 35 residents in internal medicine (convenience sampling technique), with the age gap ranging from 22 to 32 years. The inclusion criteria were that the individuals should be in their third or fourth year of the medical course or be internal medicine residents of the partnering institutions. Participants who declined to participate or failed to fill in the questionnaire were removed. There were no further pre-study screening procedures performed. The participants were divided into two categories (medical students and residents) according to the level of training. This categorization helped to compare the self-reported cultural proficiency at pre-graduate and post-graduate stages. There was no randomization and blinding.

A self-administered, locally developed questionnaire was used to gather data, though it was founded on established models of cultural competency, albeit specific to the Pakistani sociocultural environment. There were three basic areas of the questionnaire: unconscious bias recognition, cultural knowledge adaptation, and structural competency. The other criteria considered included cross-cultural communication, exposure to a large number of patients, and prior cultural competency training. Views on instruction methods that involved lectures, case discussions, and simulations, and hybrids, were observed. In order to determine the clarity and reliability of the questionnaire, 15 respondents were requested to pilot the questionnaire. Separately, an interactive educational intervention (case-based discussions and role-playing simulations) was conducted with 60 participants, with pre- and post-intervention assessments to evaluate the effectiveness of the teaching method. The way this group was evaluated was in the form of pre-intervention and post-intervention ratings.

The data were analyzed using SPSS Version 26.0 (IBM Corp., NY). Mean was used to express continuous variables, and independent t-tests were used to compare the groups. Paired t-tests were used to test the outcome of the pre and post-intervention on a sample of 60 participants in a pilot interactive session.

Categorical variables such as previous training, gender, clinical exposure, and preferences of instructional techniques were represented in the form of n (%) and were analyzed with chi-square tests. The statistical significance was determined as $p < 0.05$

RESULTS

One hundred and twenty individuals (n=120) were surveyed and included 85 third- and fourth-year students from medical schools and 35 internal medicine residents. The mean age of the participants was 26.8 ±3.5, and 72 (60 %) were female. Out of the participants, 34 participants (28 %) had

received formal cultural competence training, and the remaining 75 participants (62 %) reported clinical exposure to diverse patient groups. **Table 1** shows the demographic characteristics and past training experience of the subjects**.**

Table 1. Demographic Characteristics and Prior Training of Participants (n=120)

Parameter	Total (N = 120)	Medical Students (N = 85)	Residents (N = 35)	Test Value	p-value
Mean Age (years)	26.8 ± 3.5	25.7 ± 2.9	28.6 ± 3.8	4.12	<0.001*
Female	72 (60%)	52 (61%)	20 (57%)	0.14	0.71
Prior Cultural Competence Training	34 (28%)	20 (23%)	14 (40%)	3.92	0.048*
Clinical Experience in Diverse Settings	75 (62%)	50 (59%)	25 (71%)	1.64	0.20

p < 0.05 considered statistically significant.

Residents recorded significantly higher formal training than students (14 (40%) vs. 20 (23%), p = 0.048), but there were no significant differences in gender (p = 0.71). Participants rated their competence using a 0-10 scale in three areas, including recognition of unconscious bias, the use of cultural knowledge and structural competency. The average scores were always higher among the residents. The difference in self-reported levels of cultural competence in students and residents is demonstrated in **Table 2.**

Table 2. Comparison of Self-Assessed Cultural Competence Scores between Medical Students and Residents

Competency Domain	Students Mean ± SD	Residents Mean ± SD	t-test	p-value
Recognition of Implicit Bias	2.9 ± 1.1	3.7 ± 1.3	3.32	0.001*
Application of Cultural Knowledge	3.3 ± 1.2	4.0 ± 1.5	2.69	0.008*
Structural Competency	2.6 ± 1.0	3.3 ± 1.2	2.72	0.007*

**p < 0.05 considered statistically significant.*

There was also a significantly better self-perceived competence among residents, with the greatest difference observed in the recognition of implicit prejudice (p = 0.001). The intervention session comprised a group of 60 participants who participated in an interactive session involving case discussions and role-playing simulations. Self-rated ratings were evaluated prior to and after the session. **Table 3** shows the results of the competency scores before and after the intervention.

Table 3. Effect of Interactive Educational Intervention on Cultural Competence Scores (n = 60)

Competency Area	Pre-Intervention Mean ± SD	Post-Intervention Mean ± SD	Paired t-test	p-value
Understanding of Cultural Competence	3.2 ± 1.3	7.4 ± 1.1	10.21	<0.001*
Awareness of Implicit Bias	3.5 ± 1.2	7.1 ± 1.0	9.45	<0.001*
Confidence in Cross-Cultural Communication	3.1 ± 1.4	6.9 ± 1.2	8.76	<0.001*

*p < 0.05 is considered statistically significant.

The interactive session demonstrated a significant increase in cultural competency in all aspects (p < 0.001). The respondents rated the effectiveness of various modes of instruction on a 1-5 Likert scale. The interactive and blended forms have been chosen as opposed to the traditional lectures. **Table 4** presents the preferences of the participants on the instructional methodologies.

Table 4. Participants' Preferences for Teaching Methods in Cultural Competence Training

Teaching Method	Rated "Very Effective" n (%)	χ^2 Value	p-value
Lecture Only	18 (15%)	16.32	0.001*
Workshop / Interactive Sessions	42 (35%)	7.50	0.006*
Combined Lecture + Workshop	60 (50%)	13.20	<0.001*

**p < 0.05 considered statistically significant.*

The most preferred modality was the combined lecture and interactive workshop (n=60, 50%), followed by interactive workshops (n=42, 35%), and lectures on their own (n=18, 15% and p = 0.001).

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DISCUSSION

This study revealed that there were profound gaps in cultural competence training in Pakistani medical students and residents. Only 34 (28%) of the respondents reported formal training in cultural competence, and self-assessed competence scores were largely low, particularly in recognition of implicit bias, utilization of cultural knowledge in clinical practice, and structural competency. In all aspects, residents performed better than undergraduates, showing the effect of clinical experience. The pilot educational intervention significantly increased the understanding and confidence of the participants and the mean scores improved by 34-40 percent in all the domains used to evaluate them. Most of the participants preferred blended education methods where lectures are combined with interactive classes as opposed to the use of pure lectures.

The poor baseline competency rating indicates that there is urgent need to institute the structure of cultural competence training in the medical courses. Previous studies have reported that undergraduate medical training often ignores sociocultural competencies, and instead focuses on biomedical information and technical skills [11,12]. Similar research in most other foreign contexts has suggested that healthcare trainees frequently lack knowledge of implicit bias and population health determinants [13,14]. These trends are consistent with our results, which revealed that medical students and residents possess limited practical culturally responsive care provision abilities.

Active, learner-centered teaching practices are effective as shown by the significant improvement that was achieved following the pilot intervention. It has been shown that case-based discussions, role-plays, and simulations enhance confidence, information remembrance, and the capacity to translate the cultural competence into practical, real-life contexts [15,16]. Moreover, the fact that participants prefer blended learning is correlated with the literature that shows multimodal solutions, i.e., combining experience learning with didactic instruction, to be more effective in engagement and learning skills acquisition than traditional lectures [17,18]. These findings give reasonable grounds to the incorporation of participative strategies in medical training programs to facilitate practical cultural competency.

To equip future healthcare professionals with culturally diverse patient groups, the study highlights the importance of premeditated educational programs. The level of patient satisfaction may increase, healthcare inequity can be reduced, and patient-provider communication may become more culturally competent [19]. Even though experience alone is not enough without formal training, the fact that residents have higher scores would suggest clinical exposure facilitates the development of skills [20]. The skills of culturally responsive care, such as reflection, empathy, and adaptation, could be

supported through interactive education modalities [21,22]. The implementation of such strategies can have broader implications on the delivery of care within a multicultural and multiethnic setting [23].

This research was limited by the use of a cross-sectional study design and a sample based on two academic centers, which might not be reflective of the national setting. In addition, self-assessment can introduce bias and the short-term nature of the pilot intervention does not provide information on long-term retention or application in realistic clinical settings. The research should be expanded in future to bigger and multi-center samples, objective assessments of competency, and longitudinal analysis of educational interventions. The implementation of cultural competence training in medical education and assessment of patient outcomes would provide a more detailed picture of its impacts [24,25].

CONCLUSION

The study revealed significant gaps in cultural competency instruction among Pakistani medical students and residents namely in recognizing implicit bias, applying cultural knowledge and understanding structural determinants of health. Pakistani medical curricula currently lack structured cultural competence education, leaving most trainees unprepared to address implicit bias, apply cultural knowledge, or navigate structural determinants of health. Based on the findings of this study, we recommend three evidence-based actions: mandatory integration of cultural competence modules into both undergraduate and postgraduate medical curricula; replacement of didactic-only lectures with blended learning approaches that combine interactive workshops and case-based discussions; and longitudinal assessment of cultural competency using objective, standardized tools rather than self-report alone.

LIST OF ABBREVIATIONS

None

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CONFLICT OF INTEREST

None.

ETHICAL APPROVAL

This was a cross-sectional, questionnaire-based study carried out in Superior University, Avicenna Medical College, Bolan Medical College Pakistan between October and December 2024 (Ref: 10/24/RS-3510) after informed consent.

AUTHORS' CONTRIBUTION

ZH: Conceptualization, study design, data collection, manuscript writing.

AA: Data analysis, statistical interpretation, table preparation.

BM: Literature review, manuscript editing, references verification.

DS: Intervention design, role-playing simulations, data collection.

SIAZ: Ethical approval, supervision, critical revision.

MA: Questionnaire development, pilot testing, manuscript formatting.

All participated equally as per ICMJE and approved the final version to be published.

REFERENCES

1. Liu J, Li S. An ethnographic investigation of medical students' cultural competence development in clinical placements. Adv Health Sci Educ Theory Pract. 2023 Aug;28(3):705-739. doi: 10.1007/s10459-022-10179-7.
2. Rukadikar C, Mali S, Bajpai R, Rukadikar A, Singh AK. A review on cultural competency in medical education. J Family Med Prim Care. 2022 Aug;11(8):4319-4329. doi: 10.4103/jfmpc.jfmpc_2503_21.
3. Amanullah FS, Manji AA, Usmani BA, Khan MMM, Sohail H, Zahid MH, et al. Assessing medical students' perception of cross-cultural competence at a private University in Karachi. BMC Med Educ. 2022 Jul 9;22(1):534. doi: 10.1186/s12909-022-03588-0.
4. Vella E, White VM, Livingston P. Does cultural competence training for health professionals impact culturally and linguistically diverse patient outcomes? A systematic review of the literature. Nurse Educ Today. 2022 Nov;118:105500. doi: 10.1016/j.nedt.2022.105500.
5. Yang G, Bekele A, Krishnaswami S, Ameh E, Sifri Z, Aisuodionoe-Shadrach O, et al. Cultural competency and ethical behavior for collaboration in limited-resource settings: Guidelines from the Society of University Surgeons Academic Global Surgery Committee and the Association for Academic Global Surgery. Surgery. 2024 Jul;176(1):108-114. doi: 10.1016/j.surg.2024.02.027.
6. Marriott LK, Link AR, Anitori R, Blackwell E, Blas A, Brock J, et al. Supporting Biomedical Research Training for Historically Underrepresented Undergraduates Using

Interprofessional, Nonformal Education Structures. J Scholarsh Teach Learn. 2021 May 3;21(1):241-286. doi: 10.14434/josotl.v21i1.30430.

7. Ahmed KA, Grundy J, Hashmat L, Ahmed I, Farrukh S, Bersonda D, et al. An analysis of the gender and social determinants of health in urban poor areas of the most populated cities of Pakistan. Int J Equity Health. 2022 Apr 18;21(1):52. doi: 10.1186/s12939-022-01657-w.
8. Cooper LA, Saha S, van Ryn M. Mandated Implicit Bias Training for Health Professionals-A Step Toward Equity in Health Care. JAMA Health Forum. 2022 Aug 5;3(8):e223250. doi: 10.1001/jamahealthforum.2022.3250.
9. Shah AP, Walker KA, Walker KG, Cleland J. Context matters in curriculum reform: An analysis of change in surgical training. Med Educ. 2023 Aug;57(8):741-752. doi: 10.1111/medu.15071.
10. Bhardwaj R, Agrawal U, Vashist P, Manna S. Determination of sample size for various study designs in medical research: A practical primer. J Family Med Prim Care. 2024 Jul;13(7):2555-2561. doi: 10.4103/jfmpc.jfmpc_1675_23.
11. Hashim MJ, Govender R, Ghenimi N, Kieu A, Khan MAB. LecturePlus: a learner-centered teaching method to promote deep learning. Adv Physiol Educ. 2023 Jun 1;47(2):175-180. doi: 10.1152/advan.00237.2022.
12. Arruzza E, Chau M. The effectiveness of cultural competence education in enhancing knowledge acquisition, performance, attitudes, and student satisfaction among undergraduate health science students: a scoping review. J Educ Eval Health Prof. 2021;18:3. doi: 10.3352/jeehp.2021.18.3.
13. Burk-Rafel J, Triola MM. Precision Medical Education: Institutional Strategies for Successful Implementation. Acad Med. 2025 Jun 1;100(6):655-660. doi: 10.1097/ACM.0000000000005980.
14. Li T, Wang W, Li Z, Wang H, Liu X. Problem-based or lecture-based learning, old topic in the new field: a meta-analysis on the effects of PBL teaching method in Chinese standardized residency training. BMC Med Educ. 2022 Mar 31;22(1):221. doi: 10.1186/s12909-022-03254-5.
15. Cannon-Bowers JA. Recent advances in scenario-based training for medical education. Curr Opin Anaesthesiol. 2008 Dec;21(6):784-9. doi: 10.1097/ACO.0b013e3283184435. PMID: 18997530.
16. Lavanya KM, Somu LK, Mishra SK. Effectiveness of Scenario-based Roleplay as a Method of Teaching Soft Skills for Undergraduate Medical Students. Int J Appl Basic Med Res. 2024 Apr-Jun;14(2):78-84. doi: 10.4103/ijabmr.ijabmr_431_23.

17. Alfarsi W, Elaghoury AH, Kore SE. Preferred Learning Styles and Teaching Methods Among Medical Students: A Cross-Sectional Study. Cureus. 2023 Oct 11;15(10):e46875. doi: 10.7759/cureus.46875.
18. Mlambo M, Silén C, McGrath C. Lifelong learning and nurses' continuing professional development, a metasynthesis of the literature. BMC Nurs. 2021 Apr 14;20(1):62. doi: 10.1186/s12912-021-00579-2.
19. Krishnamurthy K, Selvaraj N, Gupta P, Cyriac B, Dhurairaj P, Abdullah A, et al. Benefits of gamification in medical education. Clin Anat. 2022 Sep;35(6):795-807. doi: 10.1002/ca.23916. Epub 2022 Jun 8. Erratum in: Clin Anat. 2025 Nov;38(8):886. doi: 10.1002/ca.24250.
20. Jiao Z, Yang Y, Zhang S, Xu J. A comparative study about attitudes towards the efficiency, effectiveness, and atmosphere of offline and online learning among medical students. Ann Transl Med. 2022 Dec;10(23):1270. doi: 10.21037/atm-22-5112.
21. Gradellini C, Gómez-Cantarino S, Dominguez-Isabel P, Molina-Gallego B, Mecugni D, Ugarte-Gurrutxaga MI. Cultural Competence and Cultural Sensitivity Education in University Nursing Courses. A Scoping Review. Front Psychol. 2021 Sep 29;12:682920. doi: 10.3389/fpsyg.2021.682920.
22. Bakhshi SK, Afzal N, Merchant AAH, Abdul Rahim K, Shaikh NQ, Noorali AA, et al. Undergraduate Medical Education Curriculum Reforms in Pakistan: A Mixed Methods Study of Academic Leadership Perspectives. Acad Med. 2024 Jul 1;99(7):794-800. doi: 10.1097/ACM.0000000000005683.
23. Solchanyk D, Ekeh O, Saffran L, Burnett-Zeigler IE, Doobay-Persaud A. Integrating Cultural Humility into the Medical Education Curriculum: Strategies for Educators. Teach Learn Med. 2021 Oct-Dec;33(5):554-560. doi: 10.1080/10401334.2021.1877711.
24. Sharma M, Murphy R, Doody GA. Barriers and facilitators for implementation of a national recommended specialty core-curriculum across UK medical schools: a cross-sectional study using an online questionnaire. BMJ Open. 2022 Mar 29;12(3):e053565. doi: 10.1136/bmjopen-2021-053565.
25. Lombardero A, Assemi KS, Jacobs NN, Houmanfar RA, Trejo S Jr, Szarko AJ. An Acceptance and Commitment Training (ACT) Framework for Teaching Cultural Humility: A Guide for Translating ACT from a Therapeutic Context into a Medical Education Curriculum. J Clin Psychol Med Settings. 2023 Jun;30(2):261-273. doi: 10.1007/s10880-022-09909-1

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