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Comparison and Assessment of Communication Skills in Traditional and Integrated Undergraduate Dental Education

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ABSTRACT

Objective: To compare and assess the communication skills of undergraduate dental students of traditional and integrated system of education.

Materials and Methods: Verbal and written consent was taken from dental students. They were then observed while interacting with patients during their clinical rotation using Kalamazoo Essential Communication Checklist (adapted) KEECC-A. KEECC-A consists of seven items scale on which scoring was done and these items corresponds to seven elements of a doctor's communication. All the obtained data was then put into SPSS to obtain comparison of Means and Levene's test. Results were derived based on data obtained.

Result: A total 100 of dental students were observed during their clinical rotations, and were assessed using Kalamazoo Essentials Elements Communication Checklist(adapted) KEECC-A. It consists of seven items, the means of item 1: Builds a relationship, for group-a and group-b is same whereas the means of item 2: Opens the discussion, item 3: Gathers information, item 4: Understands the patient's perspective, item 5: Share information, item 6: Reaches agreement, item 7: Provides closure, have significant difference in their values. Group-b has higher means, which shows the students in this group have done better. Levene's test result shows only Item-1 have a value of p higher than 0.05, whereas (item-2) to (item-7) have value of p less than 0.05, which shows significant difference between both groups.

Conclusion: The conclusion of this study is that dental students from integrated system have done well in (item-2) to (item-7) and performance of item-1 in both group-a and group-b is similar. Therefore, it is concluded that an integrated system is better than a traditional system.

Keywords: Communication, Curriculum, Dental Students, Education, Kalamazoo, Undergraduate

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INTRODUCTION

Soft skills have long been recognized as essential in the field of dentistry. Among them, communication skills are particularly critical, as they influence patient trust, treatment adherence, and overall satisfaction. The development of these skills should begin early in professional education, enabling students to build and refine them throughout their training and into clinical practice. [1]

Modern dental education is transitioning from a traditional, discipline-focused, and teacher-centered model to a competency-based, student-centered approach. [2] In this shift, vertical and horizontal integration in the curriculum allows students to apply knowledge creatively, develop interpersonal skills, and communicate effectively with patients from the outset.

One of the pre-requisites of a competent dentist is that they should be able to communicate effectively with patients as well as show empathy towards them along with being observant regarding their needs and respond aptly.[6] Healthcare professionals that have good communication skills can deliver quality treatment, boost patient satisfaction, and improve patient outcomes.[1]

Communication skills play a vital role in dentistry, as they are essential for building trust and fostering understanding between the dentist and the patient. [3] In traditional dental curricula, typically spanning four years, the first two years focus primarily on theoretical instruction and foundational sciences such as dental anatomy, physiology, pathology, pharmacology, microbiology, and dental materials. The final two years emphasize clinical subjects and hands-on practice. In contrast, integrated curricula expose students to clinical settings and patient interactions from the beginning of their education. This early exposure allows students to apply theoretical knowledge in real-world situations, potentially enhancing the development of essential communication skills. Despite this shift, limited evidence exists on how these two curricular models differ in fostering communication competence among dental students, highlighting a gap this study aims to address.

Currently, there has been a shift towards including more interdisciplinary and patient-centered approaches in dental education, which may involve more hands-on and simulation-based learning experiences and a stronger emphasis on communication, ethics, and professionalism from the beginning of dental school.[5]

Soft skills, including interpersonal communication, professionalism, leadership, adaptability, and time management, are essential for dental professionals to function effectively in clinical settings.[1,4] To ensure the development of these competencies, it is crucial to integrate them into the dental curriculum from the onset of professional education.[1] Emphasizing these skills early helps students gradually refine them throughout their academic and clinical training, better preparing them for real-world challenges.

There has been a global transition in dental education from traditional, teacher-centered approaches to competency-based, student-centered models.[2] In competency-based education, curricular integration, both horizontal and vertical supports active learning, critical thinking, and the development of essential professional behaviors.[4] These modern curricula emphasize the holistic preparation of students, not only in clinical competence but also in non-technical skills like communication and ethical practice. However, despite growing recognition of their importance, the structured teaching and assessment of communication skills are still inconsistently applied, particularly in some traditional systems.[6] This inconsistency highlights the need for a clearer understanding of how different curricular structures influence the development of soft skills, especially communication, among undergraduate dental students.

The significance of this study lies in its contribution to understanding the development of soft skills, particularly communication, among undergraduate dental students enrolled in traditional and integrated curricula in Pakistan. Despite global advancements in competency-based dental education, there is limited local evidence comparing how these two curricular models impact students' communication competencies. This gap underscores the need for data-driven insights to inform curriculum improvements. Therefore, the rationale of this study is to evaluate the differences in communication skills between students in traditional and integrated programs, with the goal of recommending educational enhancements. The study aims to assess and compare the communication skills of undergraduate dental students in both systems using the adapted Kalamazoo Essential

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Elements Communication Checklist.

MATERIALS AND METHODS

The study included third-year BDS students from participating institutions who were undergoing their clinical rotations in the Outpatient Department (OPD). A total of 50 students were selected from each institution, representing both traditional and integrated curriculum models. These students were observed and assessed while interacting with patients during their clinical sessions. Verbal consent was obtained from all participants prior to observation.

Ethical approval for the study was obtained from both participating institutions. The dental college following the traditional curriculum granted approval under reference number Rawal/RDC/ERC/22/06 on April 13, 2022. The institution implementing the integrated curriculum provided approval under reference number IIDC-training/19/151 on April 18, 2022.

The approach used in this study is quantitative as it involves statistical analysis of numerical data collected from group-a and group-b. The goal is to identify differences and similarities among both groups and to draw conclusions about the groups being studied. According to the educational approach this study is a comparative cross-sectional quantitative type based on survey.[20]

The study took place at two places:

- Participating dental college of traditional curriculum, **a**
- Participating dental college of integrated curriculum, **b**

The study started from April, 2022 and ended in December,2022, so total duration was 8 months after the IRB and synopsis approval.

Kalamazoo Essential Elements Communication Checklist, adapted, KEECCA was used as the data collection tool.[7]

There are different tools present for assessing communication skills, whereas Kalamazoo Essential Element Communication Checklist is used for assessing medical or dental students by observing their interactive skills. The Kalamazoo Consensus Statement along with skill competencies for each activity identifies the seven evidence-based "essential elements," of efficient doctor-patient communication. KEECC is one of the key communication techniques, which were outlined for the establishing therapeutic interactions with patients and family. KEECC-A tool had a Cronbach α value of 0.84, which hence proved that this tool has high reliability, and it is an updated, construct-valid version.

Group statistics demonstrate how different the two groups are from one another and reveal which group would have a higher mean, variation between the two student groups' combined scores and the scores they received in each of the seven categories.

The KEECC-A scale recognizes 7 key components of communication in clinical interactions, each of these components define 3-4 parameters to evaluate the candidate on five points Likert scale from poor to excellent.

The rating done on a Likert scale is as following:

1= Poor, 2= Fair, 3= Good, 4= Very Good, 5= Excellent

The scoring was done and the mean scores of the participants were recorded in each of 7 categories.[9]

Following are the 7 categories on which the scoring was done:[7]

a) Builds a relationship: In this category, dental students were observed while greeting patients and according to the concern and care, they show towards the patients.

b) Opens the discussion: In this category, dental students were observed while asking patients about their complaints and reason for coming to see the doctor.

c) Gather information: In this category, dental students were observed while gathering information regarding complaints of patients and the way they question them.

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d) Understands the patient's perspective: In this category, dental students were observed asking beliefs and concerns of patients and what would be their expectations regarding treatment.

e) Shares information: In this category, dental students were observed while they explained the diagnosis and treatment plan to patients.

f) Reaches agreement: In this category, dental students were observed while they were inquiring about a patient's ability to follow a treatment plan.

g) Provides closure: In this category, dental students were observed while summarizing the treatment plan and closing the interview.

50 students each from an integrated and traditional system of curriculum were selected.

All of the dental students of third year who participated were doing clinical rotations and were chosen by a non-probability, convenient sampling technique.[19] Students of both genders, male and female, participated equally in this study.

Figure no. 1 and Table no. 1 shows the T-test, it is used to compare the means of two groups, to know whether the values of both groups are different significantly or same to a certain degree. Independent sample test further consists of two parts, (A) Levene's Test for Equality of Variances and (B) t-test for Equality of Means. SPSS version 26.0 shows a variance homogeneity test, which is known as Levene's test (Table no.2).

Table no.1: Comparison of Means (n=50)

Item number	Group A	Group B	Total
Item 1 (Build relationship)	4.66 ± 0.688	4.68 ± 0.471	4.67 ± 0.587
Item 2 (Opens the discussions)	3.28 ± 0.927	4.28 ± 0.757	3,78 ± 0.980
Item 3 (Gathers information)	2.56 ± 1.280	3.66 ± 0.848	3.11 ± 1.214
Item 4 (Understand the patients perspective)	2.50 ± 1.216	3.90 ± 0.953	3.20 ± 1.295
Item 5 (Share information)	2.34 ± 0.745	3.42 ± 0.835	2.88 ± 0.956
Item 6 (if reach agreement)	1.14 ± 0.351	3.62 ± 1.141	2.38 ± 1.503
Item 7 (Provide closure)	1.56 ± 0.644	3.94 ± 0.935	2.75 ± 1.438

Table No. 2: Levene's Test

Item number	Variance	Sig. (2-tailed) P value	Mean difference + standard error difference deviation
Item 1 (Build relationship)	Equal variance assumed	0.866	-0.020 ± 0.118
Item 2 (Opens the discussions)	Equal variance assumed	0.000	-1 ± 0.169
Item 3 (Gathers information)	Equal variance assumed	0.000	-1.100 ± 0.217
Item 4 (Understand the patients perspective)	Equal variance assumed	0.000	-1.400 ± 0.219
Item 5 (Share information)	Equal variance assumed	0.000	-1.080 ± 0.158
Item 6 (if reach agreement)	Equal variance assumed	0.000	-2.480 ± 0.169
Item 7 (Provide closure)	Equal variance assumed	0.000	-2.380 ± 0.161

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Figure No 1: Presents the Mean Score Comparison of Seven Communication Skill Items between Group A (Traditional Curriculum) and Group B (Integrated Curriculum).

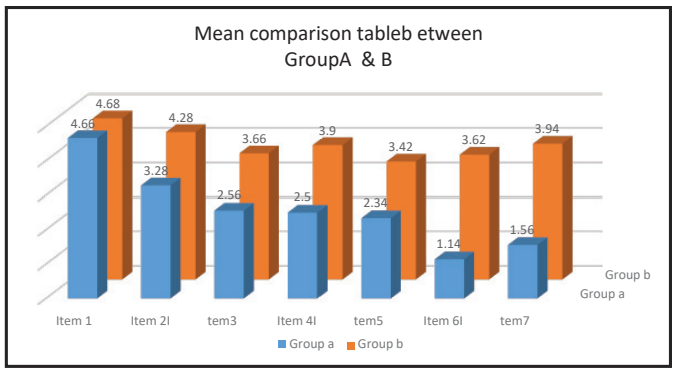
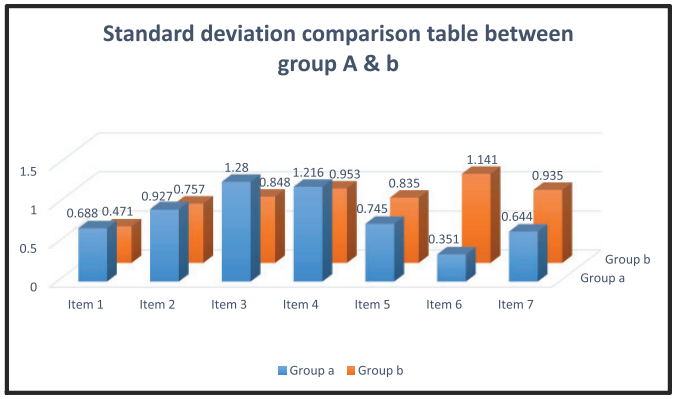


Figure No 2: Illustrates the Comparison of Standard Deviation (SD) Values For Seven Communication Skill Items between Group A (Traditional Curriculum) and Group B (Integrated Curriculum).



RESULTS

The study included 100 third-year dental students, with 50 participants each from institutions following traditional (Group A) and integrated (Group B) curricula. All participants were undergoing clinical rotations at the time of data collection. A non-probability, convenient sampling technique was used to recruit the students. The gender distribution comprised 72 females and 28 males, with equal representation from both curriculum models. The overall response rate was 100%.

To compare the communication skills between the two groups, an independent samples t-test was applied using SPSS version 26.0. Prior to comparison, Levene's Test for Equality of Variances was conducted to assess the homogeneity of variance. The analysis indicated a statistically significant difference in mean communication scores between students in the traditional and integrated curriculum groups.

Students enrolled in the integrated curriculum demonstrated higher average scores in communication competencies compared to those in the traditional curriculum. These findings suggest that early exposure to clinical environments and a competency-based, student-centered approach in the integrated system may play a pivotal role in enhancing communication skills among dental students.

DISCUSSION

There are many elements that need to be focused on with regards to teaching communication skills, one is the lack of empathy seen among the dentists, this ability of empathy is basically associated with communication and to understand what the patient is going through.[8] Element of empathy have shown to decline as gradually the dental graduates increase seeing the number of patients and that is why a dental graduate should be given the interpersonal skills training throughout their dental college life as well as in professional practical life.[10] Holden, says that students of dentistry know what to say but do not know how to say it. In another article Chilcutt stated that training to enhance an individual's interpersonal skills have been seen in dental schools but emphasis on team communication is lacking, he also said that lack of training in leadership and communication skills can lead to increased staff related stress and high turnover in dental practice.

Van Der Molenet et al. studied the effectiveness of a communication skills training program in reducing patients' anxiety and fear of dental procedures. Communication skills training improves the knowledge and behavior of dentistry students, he also it improves the ability to communicate with patients and they become more aware of their limitations.

It is suggested in one of the studies that the patient's satisfaction becomes maximum if the doctors have taught the communication skills as a part of curriculum in initial years of their school as well as it boosts their competency resulting in more satisfied patients in future.[11] An integrated curriculum system allows for better coordination and resource utilization, which can reduce redundant work and costs.[13]

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Clinicians' interpersonal skills have a huge impact on quality of patient care, and it ultimately leads to better health outcomes down the road. A decrease in medical lawsuits resulting from alleged medical malpractice is another benefit of improved communication between the patient and the doctor.[14] It also increases compliance and fosters trust. To develop more clinically competent doctors, medical students need to be taught effective communication and counseling approaches.

The Kalamazoo Consensus Statement along with skill competencies for each activity identifies the seven evidence-based "essential elements," of efficient doctor-patient communication. KEECC is one of the key communication techniques, which were outlined for the establishing therapeutic interactions with patients and family. The main purpose of the assessment is to see whether the particular behavior is inculcated in the professionals during their early years or not.[12] One of the useful tools to assess the communication skills of health professionals is Kalamazoo Essential Element Communication Checklist, which consists of 7 components.[15]

In our study, the Kalamazoo Essential Communication Checklist—a valid and dependable gauge of doctor communication abilities—was utilized to evaluate the students' communication abilities. Doctor patient communication that should be more patient-centered is taught through clinical intervention in integrated curriculum and it aims to impart a specific behavior based on predetermined values and ideas, and it also necessitates some certain level of emotional involvement. Efficient communication skills training assumes that students understand how these abilities are essential prerequisite competencies that they should develop while studying.[4] Integrated curriculum system in dentistry promotes the retention of information as it presents a comprehensive understanding of the subject matter. Students are trained to link various disciplines, which helps in retaining the information for a longer period. The traditional curriculum system, on the other hand, teaches each subject in isolation, which may not promote retention of information.[5]

One study published in the European Journal of Dental Education found that an integrated curriculum system led to better knowledge retention and improved clinical reasoning abilities among dental students compared to a traditional curriculum system. In the healthcare field, effective communication is essential for a positive patient-doctor relationship and as a result, satisfaction level of patients and their management improves. An integrated system helps in improving communication abilities of students and eventually improving their problem solving skills. There are two curriculums, which are used in Pakistan. First one is traditional, where students start interacting with the patients from the 3rd year of their medical school. Whereas second is integrated, where students start engaging with patients from the 1st year of their medical school.[16]

An integrated curriculum system in dentistry combines several disciplines into a cohesive program of study, rather than teaching each subject in isolation.[18] This approach aims to improve student learning by promoting critical thinking, problem solving, and application of knowledge to clinical practice.[4] In accordance with cognitive, psychomotor and affective domains of the Bloom's taxonomy, the proposed integrated dentistry is a system that divides traditional disciplines into themes.[17] As recommended by PMDC, a healthcare professional should be an effective communicator with excellent interpersonal skills. The limitation of our study is that data was collected only from the dental students of third year because the final year of group-a institute was not practicing integrated system and dental students of first and second year from group-b were not practicing traditional system.

CONCLUSION

The conclusion to our study is that the soft skills of students taught by integrated curriculum had performed better in majority of the items (according to the KEECC-A tool) than those students who were taught by traditional curriculum.

DISCLAIMER

None to declare.

CONFLICT OF INTEREST

There is no conflict of interest among the authors.

ETHICAL STATEMENT

Ethical approval was provided by the Ethical Review Committee at Rawal Institute of Health Sciences Ref No:

RIHS/IRB/24/013.

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AUTHORS CONTRIBUTION
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