Perception about A Traditional Model vs Peyton's Approach used as Method of Learning in Clinical Skill Laboratory among Undergraduate Dental Students of Hyderabad.

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ABSTRACT:

Objective: This research study aimed to identify the learning methods used in a skill laboratory and to compare the effectiveness of traditional learning versus Pyeton's four-step approach.

Methodology: It was Descriptive Cross-sectional study performed at Liaquat University of Medical and Health Sciences, from May 2021 to July 2021. Ninety students from the target population (3rd year BDS, LUMHS) participated in this cross-sectional study, which took place between May 2021 to July 2021. The data collection tool consisted of a section on demographic information and questions regarding learning styles and the student-teacher ratio. Data analysis was performed using SPSS 26.0, and descriptive statistics were employed for the examination of the data

Results: Eighty-four percent of students received training from their teacher using the traditional instructional model (see one, do one) in the clinical skills laboratory. Meanwhile, most participants in this study favored Peyton's 4-step approach to learning in clinical skills laboratories, believing it leads to improved outcomes before and after graduation. Additionally, all undergraduate dental students were unaware of the four-step approach as an effective learning method in clinical skills laboratories prior to this study.

Conclusion: These findings align with previous research conducted in first-world countries in this area.

Key words: Pyeton's four step approach, Clinical Skill laboratory, See one and do one approach

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Introduction:

The domains of medicine and dentistry are experiencing rapid growth. A clinical skills laboratory is an integral part of the curriculum in medical and dental schools, providing students with the necessary skills to become physicians. The ability of a student to demonstrate proficiency in clinical procedures is considered a vital aspect of the medical faculty curriculum[1] Often, the term "skills" is used to encompass practical, psychomotor and clinical, technical, communication, physical examination, and various other competencies[2].The Pakistan Medical and Dental Council is responsible for accrediting all medical and dental colleges in Pakistan. Undergraduate dental programs generally span four years, with the initial two years designated as "pre-clinical" and the latter two years as "clinical." These standards are established by the relevant certifying agencies in Pakistan. As most private and public dental schools have adopted early clinical exposure through clinical skills laboratories featuring simulated patients, along with real patient interactions in clinics and hospitals, the distinction between clinical and pre-clinical education is becoming increasingly blurred. Clinical training primarily occurs through clinical posts at clinics and hospitals [3]. Often, the term "skills" is used to encompass practical, psychomotor and clinical, technical, communication, physical examination, and various other competencies[2].The Pakistan Medical and Dental Council is responsible for accrediting all medical and dental colleges in Pakistan. Undergraduate dental programs generally span four years, with the initial two years designated as "pre-clinical" and the latter two years as "clinical." These standards are established by the relevant certifying agencies in Pakistan. As most private and public dental schools have adopted early clinical exposure through clinical skills laboratories featuring simulated patients, along with real patient interactions in clinics and hospitals, the distinction between clinical and pre-clinical education is becoming increasingly blurred. Clinical training primarily occurs through clinical posts at clinics and hospitals [3]. Often Students are required to document their clinical learning experiences in logbooks and portfolios. Three notable dental institutions operate their own teaching hospitals: LUMHS, Shaheed Benazir Bhutto Dental College, and Baqai Dental College. The student-to-teacher ratios in the basic sciences and clinical phases are 1:12 and 1:4, respectively, whereas the ratio in the skill lab is 3:1. Other medical schools utilize Health Department hospitals and various clinical facilities for their clinical training [3, 4]. The continuous advancement of dentistry and medical education on a global scale has elevated standards and provided broader benefits to society. To address the chal lenges posed by the global educational landscape, it is essential to enhance rapid organizational strategies within

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our system. Medical and dental educational programs must maintain professional standards, skills, and development to enable students to engage more diligently and deliver services to their patients and the profession more efficiently [5]. In addition to the skill laboratory, The Aga Khan University has a modern center for innovation in medical education located on its Karachi campus. The Center for Innovation in Medical Education (CIME) has eight objectives aimed at enhancing learning methods:[1]. Incorporate simulation across all campuses of AKU's undergraduate and graduate medical education programs[2]. Serve as a valuable resource for everyone within AKDN and AKU[3]. Develop a new educational program that addresses the need of the participants both nationally and regionally[4]. Promote interprofessional education in practical settings[5]. Initiate research and innovation through simulation[6]. Cultivate leaders in medical education grounded in simulation practices[7]. Forge partnerships in education, research, and innovation, including collaborations with the business sector[8]. Achieve global recognition and accreditation as a 'Centre of Excellence'[6]. Additionally, a study was conducted in Germany that evaluated various skill training methods against Peyton's 4-Steps-Approach for cardiopulmonary resuscitation (CPR) skill training, implementing the actions suggested by Peyton's technique to effectively enhance practical clinical skills. Peyton's approach consists of four steps:[1]. Demonstration (show): The instructor demonstrates the skill in real time without any commentary. This step aims to set a standard for learners to observe the entire procedure[2]. Deconstruction (Talk): The instructor slowly explains each step as it is performed, ensuring that there are fewer subsections for the skill. The instructor revisits the process, this time detailing each necessary step.[3]. Comprehension (With Support): Following the teacher's instruction, the student articulates each stage of the skill. The description and execution are not simultaneous; the aim is for students to engage in recall, sequencing, and cognitive involvement. (While the teacher adheres to the student's guidance, the student is required to clarify each sub-step.)[4]. Execution or Performance (Independently): The learner performs the complete skill on their own, with the goal of ensuring mastery and receiving feedback on their abilities[7]. In the field of education, platforms based on virtual reality are increasingly gaining traction[8]. In order to identify the current methods for teaching and enhancing dental clinical skills, a study was conducted in southern Nigeria. The processes of teaching and learning that take place during clinical sessions in skills laboratories are rarely recorded, and the application of simulators in operative dentistry is not a recent development[9]. The performance of undergraduate dentistry students may be improved through the integration of technology-assisted teaching and assessment tools during their preclinical skills training[10].Teaching technical skills to students requires specific methods and strategies. One approach that is gaining popularity in medical education is Peyton's four-step method[11]. According to this study, it is essential to recognize the significance of Peyton's teaching methodology, the teacher-to-student ratio for dental students, and how these elements will influence the future utility of clinical skill laboratories. Additionally, medical educators should be trained in Peyton's approach, as well as in the use of updated mannequins or simulators, enabling students to enhance their dental procedural skills and, upon graduation, effectively contribute to their profession for the benefit of patients and the community.

Objective:

This research study aimed to identify the learning methods used in a skill laboratory and to compare the effectiveness of traditional learning versus Pyeton's four-step approach.

Methodology:

A complete group of 100 third-year BDS students from the 2021 academic year at Liaquat University of Medical and Health Sciences (LUMHS) Jamshoro participated in a cross-sectional study. To evaluate their understanding of Pyeton's technique in the skill laboratory and traditional learning methods, participants were asked to fill out a questionnaire via an online Google form. The study's methodology was thoroughly reviewed and approved by the LUMHS Ethical Review Committee . A representative from the third-year dentistry cohort was approached in person to explain the initiative and request that they share the survey link with their classmates. Each question featured two to three closed-ended responses, facilitating the evaluation of the teaching method used in the skill lab. Most questions provided a yes/no option for students to choose from.

Following data collection, the raw data was assessed for completeness and consistency. SPSS version 26.0 was used for the analysis. Among the descriptive statistics used were the average, standard deviation, and percentage. For item analysis of questions with reliability of ≥ 0.7, Cronbach's Alpha test was used. The following items were measured: students' perceived learning results, satisfaction with teaching methods, confidence in their ability to perform abilities, and the competency and transferability of those skills in clinical settings.

The review committee of Liaquat Medical and Health Sciences University Jamshoro, Hyderabad, was consulted in order to obtain ethical permission for this study (Letter No: LUMHS/REC/-44 Dated-8/3/2021).

Results:

This study focused on one hundred dentistry students. Out of the 100 students, 90 completed the survey; while 10% did not respond or submitted incomplete survey form. The results showed that 34.4% percent of dental students were aware of proper definition of clinical skill laboratories, while 65.6% students are unaware of the correct definition of clinical skill Laboratories. When asked about the instruction method in skill lab, the majority of par-

Table No 1: Knowledge of dental students about Skill lab.

Response	n	%	Valid %	Cumulative %
Clinical skill laboratory for clinical skills only	29	32.22	32.22	32.22
Clinical skill laboratory for communication only	0	0	0	0
Clinical skill laboratory for IT skills only	0	0	0	0
Clinical skill laboratory for Procedures only	30	33.33	33.33	33.33
Clinical skill laboratory for clinical skill, communication , IT and procedures skills before graduation	31	34.44	34.44	100
Total	90	100	100	

ticipants (84.4%) agree that the skill lab teacher uses a see-one-do-one traditional style for instruction while 15.6% were unfamiliar with the instruction method. None of the students during current study was not familiar about Pyeton's approach of learning clinical skill for procedural skill acquisition or of contemporary methods of skill learning. Students were knowing that each teacher provide instruction to 25 students in skills lab, however all students were of opinion that more teachers are needed to provide clear understanding of the skills.

When students explained about Pyeton's approach of learning clinical skill for procedural skill, majority of students (67%) were of opinion that they would like to favor Pyeton's four-step approach of learning in the skill lab over the traditional "see one, do one" method.

Discussion:

The current study's goal was to use skill laboratory to ascertain the prevalence and comparison of the see-one-do-one strategy vs Pyeton's four-step technique among third-year dental students pursuing bachelor's degrees in dentistry and surgery at LUMHS. Although a lot of research has been done to look into undergraduate medical and dental students, this is the first study to be done at Liaquat University of Medical and Health Sciences (LUMHS) Jamshoro in a time when technology is advancing quickly and students are contacted online..

This is comparable to a number of earlier research. For instance, a study conducted on 34 medical students in their second and third years revealed no significant group differences in age, sex, or level of education in the medical field because the study was a controlled trial. The author divided the participants into two groups, one for the study and one for the control, and taught them a technical procedure before comparing the results. IG demonstrated significantly improved results and findings based on global evaluation measures evaluating professionalism and accompanying patient-doctor communication (both ps <.001). In terms of professionalism and doctor-patient communication, the four-step Peyton's approach is superior to standard intervention. It also results in speedier performance when participants demonstrate the learned ability for the first time[14]. In contrast to current research, Peyton's approach, which is backed by dental students, has demonstrated that the modern method of learning in the skill lab is superior to the see-one-do-one approach, and that students' clinical performance can improve as the student-teacher ratio rises.

Additionally, Another study conducted on surgical suture courses for dentistry students utilizing Pyeton's method of learning vs the PDCA cycle using video self-monitoring. The results were astounding, and it was discovered that the PDCA approach with video self-monitoring produced the following outcomes. Subjective questionnaire evaluation revealed that PDCA-group members saw a greater subjective improvement in performance . Additionally, the objective data showed that the PDCA groups outperformed the Peyton group in terms of learning success[15.] Additionally, a study comparing the best practices model (BSPL) and the traditional approach to see one and do one was conducted. The results of the study indicate that, in a simulated setting, BPSL is significantly more effective than TRAD for skills of various complexity (such as IV cannulation and NGT) that are assessed both immediately after training and at follow-up.

The study also found that the benefits of the best practices model were training, particularly in long-term retention when compared to the traditional approach. [16]

A systematic review and meta-analysis of Katia Giacomino's study on the effectiveness of Peyton's 4-step teaching approach on skill acquisition of procedures in health professions education found that the groups using Peyton's teaching approach required significantly less time to complete the procedure at post-acquisition (SMD: −0.8; 95% [CI −2.13 to 1.62]) and retention (SMD: −2.65; 95% CI [−7.77 to 2.47]) strategy's efficacy was less evident. Peyton's teaching style works best in small groups with fewer students per instructor, according to meta-regression, which also revealed that the number of pupils per teacher was a significant moderator variable.[17] furthermore we can explain about conventional approach such as didactic lectures, demonstration by instructor and see one, do one and teach one (Traditional Model) in which students watches clinical skills performed on patients then it attempted by themselves some prematurely later teach juniors for reenforcing own knowledge level [18] .

Limitation: of the study is that it was non-randomized and relied on self-reported data, making it and realized individual in nature.

Conclusion: In contrast to Peyton's four-step approach to clinical skill training, the majority of LUMHS Dental students currently use traditional teaching methods (see one, do one, teach one) in clinical skill labs. The teacher-to-student ratio is 1:25, which is not the standard student-teacher ratio, standard teacher ratio should be 1:3 during skill lab training. According to the study, the majority of students choose to train under Peyton's method, which will improve their understanding and memorization of technical procedures related to dentistry.

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Conflicts of Interest - No conflicts of interest exist.

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Author's contribution	
Veena Kumari, Gotam Kumar	Conceived idea, literature Review.
Seema Soomro, Muhammad Amjad Kalhoro	Developed Proforma, write introduction
Ruqayya Ayoob Chandio	Data Collection
Greesh Kumar Maheshwari	Manuscript draft writing, Grammatical review