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REVIEW ARTICLE

Teaching clinical skills at workplaces

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ABSTRACT

There has been an early introduction of clinical skill teaching in the undergraduate medical curriculum in recent years. Clinical skills are taught by different methods (lectures, presentations, problem-based learning, etc.) for theoretical knowledge. Teaching these skills at hospital workplaces for safety and better clinical practice is also imperative. There are two types of clinical skills- technical and non-technical. Workplaces (outdoors, emergencies, operation theatres, laboratories etc.) are dynamic hospital environments where patients are treated. In these workplaces, different teaching models like the observer model, direct responsibility model, staged approach, and one-minute preceptor is used for teaching skills to students. If skill labs and simulation-based learning platforms are available, they are also used to teach clinical skills in a stress-free environment before or in between teaching at workplaces. Integration of technical and non-technical skills is possible in actual and simulated settings. If students are well equipped with clinical skills, they feel comfortable and confident in pursuing their career in medicine.

***Keywords**: Medical education; technical skill; non-technical skill; teaching model*

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INTRODUCTION

Skill training is an integral part of undergraduate medical teaching. These skills may be technical or non-technical, and there are several skills that an undergraduate should learn. If students are trained in these skills at the workplace, it becomes easier and more effective for them to apply them in real situations. There are several models for teaching clinical skills in the workplace.

What is clinical skill?

The oxford learner's dictionary defines skill as an ability to do something well.[1] Several such skills are needed in clinical practice. Any skill performed by a clinician, if it decides the outcome of an ill patient, can be termed a clinical skill.[2]

Teaching skills at the workplace

Teaching clinical skills to undergraduate students is very important to prepare them for safe and effective clinical practice. There are many methods of teaching skills; some of them are not directly linked to actual patients. When students are trained in skills in a simulated comfortable environment, it is difficult to predict that they will be able to perform the skills in real people in busy hospital areas. On the other hand, if they are trained in the workplace in a natural setting, they will perform these skills better. A common problem for teachers in such places is that they have less time to teach students because they must simultaneously provide service to people.

What are the workplaces?

The most common places for psychomotor skill training are operation theatre, endoscopy, and procedure room. Other areas like the outdoor, emergency room, inpatient ward, laboratory and physiotherapy room are used for clinical skill training.

Types of clinical skills

There are two types of clinical skills– technical and non-technical skills. Non-technical skills are also known as soft skills. History taking, clinical examination and different procedural skills come under technical skills. At the undergraduate level, they commonly needed procedural skills are to push i.m. / i.v. Injections, placing an i.v. Line, venesection, gowning and gloving, handling instruments, knot tying, suturing, dressing, and other standard operative procedures. Though a technical skill falls mainly under the psychomotor domain, students should also understand its cognitive basis. Performing the procedure in conducive environment also needs an understanding of its affected domain.

Non-technical skills comprise decision-making, analysis, communication, leadership, collaboration, coordination and situational awareness. In the traditional teaching method, there was no provision for formal training of these non-technical skills. In newer teaching-learning methods, stress has also been given to teaching these non-technical skills.

How do you provide technical skills at the workplace?

The workplaces of the hospitals are busy areas. So a teacher can't teach a student for a considerably extended period. For example, if we consider an operation theatre, a hectic and dynamic environment prevails there.[3] It is necessary for the teaching surgeon always to be alert to maintain safe surgical practice inside the theatre.[3] A student can learn strong integration of technical and non-technical skills used in operating theatres through observation. Sometimes a surgeon may get some suitable time to demonstrate steps of the skills they are performing.

An Indian Medical Graduate should have competence in basic surgical and procedural skills. The technical skills are high-level psychomotor skills which need swift eye-hand coordination.[4] These skills should be taught at workplaces in a graded manner. Initially, they should be trained in simple skills, and the trainer should observe their progress and train them to the next level. To what level the trainee will be trained will depend on the trainee's need. The trainer should focus on skill only. The teaching sessions should be brief, and students should get time between the sessions for reflection. Development of these basic technical skills in a student creates a safe, competent and professional graduate.[4]

Non-technical skills

Acquiring non-technical skills is now considered necessary.[4] It was not included in the traditional curriculum. The new curriculum has included the teaching of both technical and non-technical skills. So, it is imperative to integrate this skill into training. It is observed that many adverse events occur in surgery not because of deficiencies in technical skills but because of deficiencies in non-technical skills.[5]

Different teaching models of training skills:

Before successfully acquiring skills, a student should learn the cognitive basis of the skill. He must see the skill demonstrated by the teacher and listen sequentially to the narrative of every step of the skill performed. In the last phase of the training, he must get an opportunity to practice the skill by himself; when he does that, it must be at a graded level of independence under the teacher's observation.

There are different models of teaching skills at the workplace: the observer model, direct responsibility model, staged approach and one-minute preceptor. If skill laboratories and simulations are available near the workplace, they can also be used for skill training, though these teaching cannot be termed as teaching at workplace.

Observer model

This model is an age-old method of teaching skills.[5] There is an old dictum- "See one, do one, teach one".[6] In this model, the student observes the teacher's skill when interacting with the patient. In this process, he learns the skill. This model is applicable in busy workplaces like OPDs and emergency rooms. In these places, the teacher does not have sufficient time for teaching.

The model has some other disadvantages. The same skill observed by different students will be interpreted differently by different students. The interpretation depends on the student's prior knowledge about the skill, and it also depends on the situation and context in which the skill is performed.[5] It is natural that a senior student will learn it better than a junior student, and a novice may not benefit. A senior student can do reflection, which will help him to adopt the skill.

To get a better result from this model, it can be improvised in different ways. The trainer can periodically ask the trainees about their experiences, and he can ask them to verbalize their observations and queries. They are also encouraged to comment if they have seen any skill inadequacies. This will not be applicable to novice and junior students. If the teacher primes the skill before performing it, the student will know how to focus on that particular skill, and this focused observation will help the student in reflection.

There is another way of making it more understandable. If the teacher starts speaking about what he is doing (thinking aloud) when performing the skill, the students will understand it easily. For a junior student, it will help him acquire the skill's knowledge part (know-how). It helps the senior students to recapitulate their prior knowledge about the skill.

An observation guide regarding the skill that the student is observing is useful. It helps the student in focusing on critical areas of the skill, and it also helps to focus on the knowledge part of the targeted skill. An observational guide is to be

prepared according to the student's level of knowledge and requirement. The observer model becomes more effective if a discussion is held on the skill prior to its performance. But, it requires more time. A debriefing session after the performance of the skill is practical. But, it also needs more time.

There are many variants of the observer model. In one variant, students in a group are individually assigned to observe different parts of a skill. At the end of the session, observations are combined. In this process, active observation of all students in a group develops.

Direct responsibility model

In this model, the responsibility for interaction with the patient lies with the student. The teacher acts as an observer. After completion of the skill, the teacher gives feedback to the student. He does necessary corrections and counsel for further improvement. This model is good because it allows the student to act as a caregiver to the patient. It helps them see themselves as future doctors in the natural setting. This model is not for a novice. But, it is helpful for senior students in developing their clinical skills.

There are a few disadvantages to the model. Every student may not come forward willfully to play the role. The teacher has to look into it so that every student in a group posted in the workplace takes part and interacts with the patient. The teacher must have enough patience to make the model effective. Moreover, because of the scarcity of time, it isn't easy to use this model in busy workplaces.

Staged approach

Peyton's four-step approach comprises four steps. In the first step, the teacher performs the skill, and the student keenly observes it. In the second step, the teacher performs the skill again and explains every part of it sequentially (as part tasks). The student keenly observes and listens carefully. In the third step, the teacher performs part tasks of the skill as instructed by the student. In the fourth step, the student first describes the skill systematically in parts and then performs it. The teacher observes.[3,5]

Peyton's four-step approach is used for teaching technical skills.[3] First step enables the student to focus only on the motor skill performed by the teacher. There is no verbal distraction as the teacher is not explaining anything. The second step helps in understanding the procedure logically and sequentially. The teacher should let him know only key information to prevent cognitive overload. The third step ensures whether the part tasks are understood. Any misunderstanding can be corrected, and teaching is adjusted according to need. In the fourth step, when the student explains the procedure teacher sees into it whether the part tasks are understood correctly. When the students performs, the skills, teacher observes whether it is done correctly. Any mistake made should be corrected immediately.

One-minute preceptor

The One-Minute Preceptor (OMP) is a teaching model which comprises five micro-skills. A group of family physicians first described this model at the University of Washington in 1992.

One minute preceptor is divided into three parts. The case presentation by the student after his interaction with the patient (it usually takes about six minutes) is followed by questioning (which takes about three minutes) and discussion (for approximately one minute). Five micro-skills are embedded in it. These five micro-skills are - (i) Ask for a commitment, (ii) Look for supporting evidence, (iii) Re-enforce what was right, (iv) Correct mistakes and (v) Teach general rules.[5]

In the first step, the student is asked to make a diagnosis after his clinical interaction with the patient. This commitment to a diagnosis helps in activating his prior knowledge. The student learns to analyze the clinical findings to arrive at a probable diagnosis. In the second step, the student is asked how he arrived at the diagnosis. The student is asked to explain other probable diagnoses, which increases his clinical reasoning power. These two steps are included in the first part of the model.

In the third step, the teacher points out the right points made by the student. It re-enforces his prior knowledge and encourages the student to be part of the teaching-learning process.

In the fourth step teacher meticulously points out mistakes made by the student during their clinical examination. It includes both commissions and omissions. It is better if the student is allowed to find those mistakes beforehand, and it allows the student to reflect and makes him more receptive to the corrections made by the teacher. Pointing out mistakes should be done consistently in a positive atmosphere, and the student should not be rebuked or humiliated. These two steps fall under the part of 'questioning and clarification', which takes approximately three minutes.

The fourth micro skill is 'teach general rules'. In this step, the teacher teaches the application of general rules to solve a particular problem. The clinical presentations of the disease may vary from patient to patient. When a student examines a particular patient, he must understand it, enabling him to examine another patient in future with the same capability. The teacher should not provide any unsupported personal opinion in teaching general rules.

This model is helpful for students as they can adapt to their roles as future clinicians. It helps them to develop their clinical skill, interpretation of their clinical findings and bedside attitude, behaviour and socialization. This model also helps the students to integrate themselves into their workplaces.

The advantage of this model is that it can be implemented within a short period. Moreover, it allows an efficient shaping of the clinical discussion. In the process, both the student and teacher are benefitted.

Other models

There are other models, like the BID and 4 C/ID models. They are usually used for a higher level of skill training. The BID model comprises of three-phases - briefing, intra-operative teaching and debriefing. This framework is used for teaching skills in the operating room.[3] The 4 C/ID model has four components. They are learning tasks, supportive information, procedural information, and additional part-task training. But, this design is meant for teaching complex skills.[3] Teaching high skills and complex skills are not mandatory for undergraduate students.

Non-technical skills training

Non-technical skills are taught to medical students with various educational tools.[7] Tools are didactic lecture, seminar, case-based learning, problem-based learning, tutorial, role play, practical, workshop, feedback, audio record feedback, video-assisted learning, simulated patients, e-learning and tOSCE (Team Objective Structured Clinical Examination). Some of these tools can be used at workplaces.

Non-technical skills taught to medical students are communication skills, teamwork skills, feedback-giving skills, breaking bad news, understanding the work environment, interpersonal communication skills, humour, interpreter interaction skills, brief motivational interviewing, nonverbal communication skills, interprofessional collaboration, cross-cultural training, debating skill, interviewing skills, empathy skills, emotional intelligence, situation awareness, task management, decision making, professionalism, personal development and so on.[7]

"Triad of outcomes", a learning outcome module devised by Nicolaides and Sideris, comprises knowledge of non-technical skills provided at initial context followed by skill performance (quantifiable to measure adequateness of specific non-technical skill) and attitude towards the skills with the subjective perception of its usefulness and purpose.[7]

Combining technical skills with non-technical skills

At workplaces, both technical and non-technical skills can be integrated. When teaching a technical skill teacher teaches non-technical skills associated with it. Non-technical skills are added to technical skills in new simulators.[3] Live animal models, mannequin, synthetic and hybrid models, are used alone or in combination in a simulated operating room to teach both skills.[3]

Feedback on skill training

Feedback should be given to the trainer immediately after their performance. It is essential to prevent the wrong acquisition of skills and automation, and it is more critical when the trainee is a novice. The frequency of feedback should be more during the initial period of training. Once the trainee progresses, feedback intensity is reduced, and they should be encouraged to get reflective feedback. The trainer should highlight what is okay in their reflection and what needs correction. In the later part of the training frequency of the feedback should be less in amount. It stimulates long-term retention of the skill. When trainees can evaluate themselves and take measures to improve their skills, feedback is not necessary.

Feedback on skill performance should be based on first-hand information, and it should be given constructively. The trainer should be calm and supportive, and feedback should be provided in simple language which is easily understood. One should always start with a positive note. The trainer should point out where they did well and then point out the areas where they need improvement.

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