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Educational Article

Promoting excellence in teaching and learning in clinical education

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الملخص

يعتبر التعلم هو لب العملية التعليمية السريرية. وقد بينت الدراسات أن هناك عدد من العوامل التي تؤثر في تطوير الكفاءة السريرية، لدى دارسي الطب منها: تعرض الطالب لعدد كاف ومتنوع من الحالات المرضية والخبرات التي تحصل في ظروف أصلية، تماثل ظروف الممارسة الطبية الحقيقية، بالإضافة إلى الاعتماد على التعليم المعتمد على الطالب وتوفير بيئة داعمة للعملية التعليمية. ويبرز دور المعلم السريري في تعزيز العملية التعليمية، وذلك بدعم وتشجيع الطالب على التأمل في الخبرات العملية التي يمر بها لزيادة الاستفادة منها وإعطاء الطالب تغذية راجعة منتظمة لزيادة فاعلية تعلمه.

إن الاعداد والتخطيط للتدريب السريري يجب أن يتم مبكرا وبطريقة متكاملة في المناهج بكليات الطب، لما في ذلك من أهمية قصوى في تنمية مهارات تشخيص الأمراض ومهارات التواصل لدى طلاب الطب. كما لابد من توثيق الخبرات والممارسات السريرية التي يقوم بها طلاب الطب، حتى يتسنى تقييمها وعمل الإجراءات والتدخلات المناسبة لزيادة فاعلية هذه التجارب.

وفي هذا السياق فإن التدريب السريري لطلاب الطب، يجب أن يتم في أماكن مختلفة يشمل المستشفيات، والمراكز الخارجية، وأقسام طب الأسرة والمجتمع وذلك لتحقيق الفوائد المرجوة، والمتعددة لكل من هذه الأماكن التدريبية. إن التحديات المتمثلة بازدياد أعداد طلبة الطب وقلة الفرص التدريبية وتطور الممارسة الطبية لتتطلب حلولا إبداعية مثل التدريب عن طريق المحاكاة السريرية.

إن جودة التدريب السريري لابد أن تتم عن طريق التقييم المستمر لكل جوانب هذه العملية وسيتم التطرق في هذه الورقة العملية للعوامل التي تؤثر في العملية التدريبية السريرية واقتراح سبل تعزيز التعلم والتدريس في التعليم السريري.

الكلمات المفتاحية: التعليم؛ التعلم; التعليم السريري; البيئة التعليمية; طلاب المرحلة الجامعية; الخبرة السريرية المبكرة

Abstract

Clinical learning is the essence of medical education. Many factors have been demonstrated to influence students' development of clinical competence. These factors include students' exposure to a large volume and variety of clinical experiences, learning in authentic clinical settings, self-directed learning, and the provision of a supportive environment. Clinical teachers have an extremely important role in the effectiveness of clinical education in supporting learners, encouraging reflection, and providing constructive and regular feedback. Early and frequent clinical experiences should be planned and integrated in curricula. The provision of such opportunities is associated with the development of appropriate attitudes and the acquisition of commendation and diagnostic skills among undergraduate medical students.

The experiences of undergraduate medical students at clinical venues should be documented to enable monitoring of the quality of their exposure and planning for appropriate interventions. The combination of teaching in family practice centers and hospitals will probably provide the most effective approach and will combine the recognized advantages from different sites. The recent challenges facing the health care system necessitate the need for innovative teaching strategies, such as simulation, to meet the inadequacy of clinical cases at the teaching sites. The quality of clinical teaching should be maintained through regular evaluations of clinical

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teachers and all teaching activities. This article addresses the possible factors that could affect the process of student learning and suggests measures to promote the quality of clinical teaching and learning.

Keywords: Clinical teaching; Clinical teaching environment; Early clinical experience; Students' learning; Undergraduate medical students

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The main aim of medical colleges worldwide is to graduate competent medical students who are capable of managing common medical problems in the community. This is achieved by providing medical students with authentic clinical experiences that enable them to apply and integrate their factual knowledge. The adequate exposure of medical students to a variety of clinical cases will contribute positively to motivating students and helping them in the development of their clinical competence. The curriculum of undergraduate medical schools is traditionally divided into two distinct phases: the preclinical and clinical. The exposure of students to clinical cases usually takes place at a late stage.

Early clinical experiences

The importance of early exposure of undergraduate medical students has been recognized, and more longitudinal integration of clinical experiences has been introduced in the curriculum.[1] Providing students with early and extensive clinical experiences during their training is crucial. The identified benefits of early clinical exposure were related to the following themes: the relationships and learning in early encounters with patients, integration with learning during the entire curriculum, aspects of doctoring learned, and personal and professional growth. These aspects provide unique opportunities for students in learning in an appropriate context.

The development of an appropriate attitude of medical students toward patients and their families was among the recognized benefits of early practical experiences. In addition, these early experiences promote the motivation and confidence of students. Students considered these experiences to be satisfying, and the experiences contributed to the development of the professional identity of students. The early practical experiences gave students opportunities to apply and integrate their previous knowledge, develop interpersonal skills and appreciate the value of patient-centred care.

Another important role of early practical experiences is to familiarize students with clinical settings and make enrolment in clerkship less stressful.[1,2]

Settings of clinical teaching

Clinical learning can take place in almost all sites where patients are exposed to medical care, including inpatient wards in specialized hospitals and centres, ambulatory care settings, family practice and community centres, nursery homes, and emergency and operating rooms.

Recent changes in the practice of medicine and disease patterns in the community led to significant developments in health care delivery systems. The increased use of technology leading to shorter average stays in hospitals and a move toward management of chronic diseases in the community mean that there are fewer hospital in-patients and secondary care is increasingly less able to provide medical students with sufficient clinical opportunities.

There are recognized strengths and limitations to learning in each of these clinical sites.

Secondary and tertiary care hospitals are the most appropriate settings for students to see rare and advanced clinical cases, to learn specialized diagnostic tests, and become acquainted with surgical and therapeutic procedures. In contrast, ambulatory and family practice settings are likely good sites to teach communication skills, have students deal with patients and their family, and be confronted with common presentations for medical problems as well as perform common diagnostic tests and minor procedures.[3]

Evidence shows that the experiences of students in an integrated primary care clerkship were variable; nevertheless, these experiences were of good learning value because little overlap was found in symptoms, conditions, procedures, and other educational opportunities.[4] Students who were taught family medicine clerkship had more confidence in acquiring a number of procedural and cognitive skills, including history taking and physical examination skills, while tertiary care and academic hospitals clerkship had a positive impact on the confidence of students in specialized procedures that were largely performed in hospitals.[5]

The combination of teaching in family practice centres and hospitals will probably provide the most effective approach because students will be exposed to a variety of experiences that will prepare them to face most common medical problems that they will encounter after graduation, thereby meeting the expectations of patients and the community.[6,7]

Features of high-quality learning and teaching

Teaching in the clinical context is unpredictable and dependent on the availability of sufficient clinical cases. These features contribute to the difficulty of planning clinical teaching compared to that of the basic medical sciences.

Documentation of students' experiences

Students are exposed to extensive varieties of medical and non-medical experiences during clerkship training. The documentation of these activities is vital and allows for the monitoring and evaluation of student learning. Many instruments are available to document the clinical experiences and activities, including logbooks, computers, and encounter cards. The availability of comprehensive documentation of exposure to diverse case mixes and feedback systems could enable evaluation and significantly contribute to the enhancement of student clinical education.[8]

The analysis of students' experiences showed significant variability with potentially worrisome gaps between these experiences. These gaps are significant, as they are related to students' exposure to common medical problems.[9]

The determinants of effective clinical teaching and learning

The variability of students' learning in the clinical context is a result of interaction of the students' characteristics, availability and engagement of clinical teachers, and patient characteristics.[10]

Furthermore, this interaction is significantly influenced by the clinical learning environment and the content of the clinical experiences.[11,12]

The development of the diagnostic process is mainly dependent on skills of history taking and physical examination, more than on performing laboratory and other diagnostic investigations.[13] This fact highlights the need to expose undergraduate medical students to a large number of clinical cases with different pathologies to develop their basic diagnostic skills.[13] Effective performance in clinical procedures requires integration between two sets of skills, those relating to conducting procedures and those relating to communicating with patients.[14]

In addition, the learning of students may be enhanced when they are exposed to a variety of clinical cases that are new for them and have positive clinical signs that are seen in authentic circumstances and to situations where students are given an active role in management.[15]

The exposure of students to high volume experiences that are associated with proper feedback was shown to be positively associated with their performance in end rotation clinical examinations, which demonstrates the importance of both the volume of clinical experiences and the quality of feedback.[16]

The active involvement and the provision of a supervised independence to learners will result in increased motivation that encourages students to apply and improve their communication and diagnostic skills. Conversely, less reliance on students, lack of opportunity to practice, and lack of continuity of supervision likely obstruct the learning of students.[17]

The availability of a supportive learning environment and proper organization of the clinical sessions, which includes sufficient space, appropriate numbers of students and sufficient time allocated for students, should be considered and planned to maximize opportunities for and benefits of learning.[18,19]

The knowledge and personal and supervisory qualities of clinical trainers are essential characteristics in the effectiveness of clinical learning,[18] and of course, the self-awareness and motivation of students are of significant importance for the effectiveness of their learning.[19]

However, one of the main difficulties that has faced clinical teaching in the past few years has been the limited number of clinical cases available for teaching and demonstration. This is a result of many factors. The cost of patient stays in hospitals has increased dramatically in the past few decades, which has resulted in the development of strategies to shorten the time of patient stays in hospitals and hence minimize the clinical learning opportunities for medical students. Other issues that have arisen include ethical aspects and patients' rights, which have also led to a decrease in the exposure of students to patients.

This has led to the development of innovative strategies such as the use of simulation in clinical teaching.

Simulation is intended to supplement and enhance rather than to replace clinical teaching. The simulation can be through the use of mannequins, simulated patients, or "patient actors". The use of simulation in clinical teaching not only can help with the issue of patient shortage but also has the advantage of being integrated in the curriculum to help and support the clinical teaching process. Frequently, when learners are faced with patients, the theory may have not been delivered to students to match the skill they are learning. However, this can be tailored in the curriculum with the use of simulation to ensure that the skill teaching is integrated at the proper time. Furthermore, the learner can rehearse and perform the skill often to ensure mastery of the skill, something that may not be possible with real patients. There is evidence that simulation in clinical teaching improves the outcome of clinical teaching. Learners have also expressed in many cases their satisfaction with this method and have stated that patient simulation has helped in improving their performances.[20,21]

Another innovative concept introduced in the process of clinical training over the last few decades is the introduction of longitudinal integrated clerkship (LIC). LIC aims to minimize the drawbacks of limited exposure of undergraduate medical students to practice patient-centred care and to have a continuity-based medical education that is usually lacking with the traditional department-based clerkship.[22] LIC requires medical students to stay in one department, preferably community-based, for an extended period of time with one or a limited number of faculty. This approach aims to enable students to practice continuity of patient care. In addition, this extended stay will help faculty and students to increase the depth of the relationship and increase the opportunity for mentoring and learning aspects of professionalism.[23]

Role of clinical teacher

The clinical teacher plays a significant role in creating an environment that facilitates the learning of students. The best way to achieve this is to actively involve medical students in the management of patients, which has been shown to motivate students and encourage them to take more personal responsibility for their own learning.[17] Furthermore, effective teaching could minimize the negative effects of an inadequate patient mix by encouraging the reflection of students on available clinical cases and by initiating discussions aimed at deep understanding and at thinking of different clinical presentations and alternative diagnoses.[17,24]

Effective teaching depends crucially on two important communication skills: questioning and giving explanations.[25] In addition, the provision of constructive feedback to students is one of the main features of teaching that enhances students learning. Both learners and teachers value the essential role of feedback; however, students report that they receive feedback less frequently than needed. Feedback sessions should be organized regularly through culturally sensitive means and in a protected time for learners and teachers.[26,27]

Clinical teachers should be prepared to know what their tasks are, conduct them properly, and maintain and develop these qualities. Clinical teachers are expected to master effective teaching strategies, facilitate discussion in small and large groups, assess learners, and provide them with regular constructive feedback. Teachers should show appropriate enthusiasm and be prepared to utilize all possible opportunities to make the learning of students more effective. In addition, self-reflection and seeking continuous personal and professional development are essential to maintain high-quality teaching.[28]

Measurement of the effectiveness of clinical teaching and learning

Evaluating the clinical teaching and learning process is a very important aspect of effective teaching. It helps in identifying areas of strength that need to be reinforced and areas that can be improved.

When trying to assess the effectiveness of clinical teaching, some aspects have to be kept in mind. Berk has pointed that information from multiple sources should be gathered and interpreted to have a valid teaching evaluation.[29]

Most assessment approaches depend on simple measures such as student scores; however, this has its limitations, as it cannot be used to measure the faculty's level of knowledge, professionalism, and teaching skills. Multiple sources of information are needed for a comprehensive evaluation of all aspects of the teaching process. A step that should be taken before collecting the data should be defining the purpose of the evaluation and who will make decisions regarding the results of the evaluation. A curriculum builder will need different information from someone planning a faculty enhancement program, and therefore the audience has to be identified to collect the information that will help in making decisions.

Tools have been developed to measure the effectiveness of teaching and learning in the clinical context. However, some use "home-made" tools to perform an evaluation. Most of these homemade tools do not adhere to psychometric standards; therefore, using "on the shelf" scales may be more accurate. Another approach would be to develop the home-made tools with the help of psychometric experts to ensure the scales address all aspects that need to be measured. In addition, performing these measurements with the use of online tools and standardizing the method and timing of the assessment is recommended because these measures can greatly influence the results of the evaluation process.[29]

The learning of students is a complex process, influenced not only by the effectiveness of clinical teachers but by other factors as well. It is essential to consider these other factors and to have an instrument that is comprehensive and aims to measure all related factors that could influence clinical learning.

Many instruments have been constructed to measure the quality of educational environments in different settings. These instruments aim to gather information about the perceptions of students regarding the main issues that could influence their learning, which include the students' perception of teaching, learning, academic atmosphere, students' involvement, and their task orientation and innovation. Other tools have focused specifically on teaching and the effectiveness of clinical teachers.[30–32]

A clinical learning evaluation questionnaire was developed and tested to evaluate six factors that were found to affect the quality of clinical learning. These factors are related to clinical cases, teachers, the authenticity of clinical experiences, the self-awareness and motivation of learners, and organization and factors related to the curriculum. The initial study on this instrument showed promising findings on the validity and reliability of this instrument.[19]

Other aspects of efficacy that should be explored include the impact of teaching interventions as demonstrated by the Kirkpatrick model.[33]

Conclusions

High quality teaching and learning in clinical context is promoted through the consideration of all of the factors that facilitate the learning of students and enhance the teaching and supervision skills of teachers. The role of the teacher is of significant importance in this process, promoting feedback and reflection to compensate for the lack of other factors such as sufficient patient mix and less motivated students.

Practical clinical experiences should be introduced early and integrated within the undergraduate medical curriculum. Organizing the clinical teaching of undergraduate medical students to involve all possible training sites and the utilization of innovative strategies in teaching will enhance the learning outcomes and minimize the negative impact of the recent changes in health care delivery systems.

The repetitive and rigorous evaluation of the clinical teaching process and environment is of significant importance in maintaining and developing the quality of clinical learning and teaching.

Recommendations

Excellence in clinical teaching and learning may be achieved by considering the following recommendations:

- Undergraduate medical students should be exposed early and frequently to a variety of clinical and non-clinical experiences to develop the appropriate attitude toward patients and their families and to acquire the needed diagnostic clinical skills.
- Clinical teachers have a major role in the clinical learning of students. Clinical teachers should be offered regular faculty enhancement programs to maximize their teaching skills and enhance the quality of their teaching experiences.
- The provision of constructive feedback to medical students is of crucial importance. It should be frequent, timely, and follow all virtual and traditional teaching activities.
- The use of new teaching strategies as simulation should be considered and implemented to face the problems encountered in teaching medical students in clinical settings.
- The evaluation of the clinical teaching and teachers should be carried out using well designed instruments to obtain valid data that can be utilized to support high quality clinical teaching and learning.

Conflict of interest

The authors have no conflict of interest to declare.

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