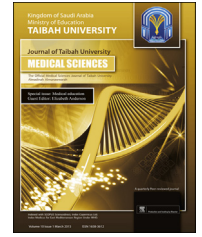




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Educational Article

Effect of early clinical skills teaching on 3rd year medical students' learning: The student perspective



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المخلص

أهداف البحث: إن الغرض الرئيس من إدراج تدريس المهارات السريرية المبكر لطلاب ما قبل المرحلة السريرية هو السماح لهم باكتساب الخبرة في مهارات الفحص السريري، والإجراءات الطبية الأساسية، وأخذ التاريخ المرضي وتعلم مهارات التواصل الطبي. وتهدف هذه الدراسة إلى تحديد فاعلية تدريس المهارات السريرية المبكر في إعداد طلاب الطب للسنوات السريرية.

طرق البحث: وزعت استبانته على طلاب الطب بالسنة الثالثة للتحقق من فاعلية تدريس المهارات السريرية المبكر على الطلاب في السنة السريرية الأولى. تتكون الاستبانته من ثمانية بنود تحتوي على خمس نقاط تقييم بمقياس ليكرت مع سؤال واحد مفتوح.

النتائج: كانت استجابة الطلاب للاستبانته بنسبة ٦٢٪. وأبدى ٩٧ (٧٠.٨٪) من الطلاب رضاهم عن استراتيجية تدريس المهارات السريرية المبكر. وقد وافق ٩٠.٥٪ من الطلاب على الفائدة الحاصلة من البرنامج في المرحلة قبل السريرية

إعدادهم للسنوات السريرية الخاصة بهم. وأبدى الطلاب ردود فعل إيجابية لاكتسابهم الخبرة في مهارات الفحص السريري، والإجراءات الطبية الأساسية، وأخذ التاريخ المرضي وتعلم مهارات التواصل الطبي مع المشرفين والمرضى. ولم يبد أي من الطلاب عدم الرضا عن برنامج تدريس المهارات السريرية المبكر.

الاستنتاجات: كان تقبل الطلاب لتدريس المهارات السريرية المبكر جيدا لإعدادهم للسنوات السريرية. ويعتبر تدريس المهارات السريرية المبكر جزءا حيويا من المناهج الدراسية للمرحلة ما قبل السنوات السريرية، وينبغي مواصلة تطويره مع الزيارات المتكررة للمستشفى لتعزيز مستوى الثقة لدى الطلاب، والأداء عند تعاملهم مع المرضى خلال السنوات السريرية.

الكلمات المفتاحية: تعلم المهارات السريرية؛ سنوات ما قبل السريرية؛ استبانته؛ الإدراك؛ أخذ التاريخ المرضي؛ الفحص السريري

Abstract

Objectives: The main purpose of the early introduction of Clinical Skills Learning (CSL) to pre-clinical years is to allow medical students to gain experience in clinical examination skills, basic medical procedures, history-taking and clinical communication. The objective of this study was to determine the effectiveness of the early teaching of clinical skills in preparing medical students for their clinical years.

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Methods: A validated questionnaire assessing the value of CSL on students in their first clinical year was distributed to 3rd year medical students. The questionnaire consisted of 8 items with a five-point Likert scale and one open-ended question.

Results: The response rate to the questionnaire was approximately 62%. Nearly 97 (70.8%) students suggested that CSL was a favourable teaching strategy. A high percentage of students (90.5%) agreed that CSL was a useful pre-clinical module to prepare them for their clinical years. The students gave positive feedback on the teaching of history-taking and physical examination, exposure to the hospital environment and acquisition of communication skills with supervisors and patients. No student perceived the CSL module as poor.

Conclusions: Early CSL was well-perceived by students in preparing them for their clinical years. CSL is a vital part of the pre-clinical curriculum and should be further enriched with frequent hospital visits to enhance students' confidence level and performance when interacting with patients during their clinical years.

Keywords: Clinical skills learning; History taking; Perception; Physical examination; Preclinical years; Questionnaire

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Introduction

Skill is defined as the ability to perform a task and is related to competency.^{1,2} Clinical skills range from skills in history taking, physical examination, and performing procedures to communication and interpretation.^{3,4}

The Clinical Skills Learning (CSL) Committee of the Faculty of Medicine of Universiti Kebangsaan Malaysia (UKM) was formed in 2005 with the introduction of a CSL module during the preclinical years as a new component of the medical undergraduate curriculum. The committee is under the Department of Medical Education, which is directly involved in the development of the curriculum of the Faculty of Medicine. It is also responsible for managing and coordinating the formulation and implementation of the medical education curriculum.

The CSL committee is headed by a senior clinician as the chairperson. Other members include a deputy chairperson and the heads and assistant heads of the CSL modules for each semester. The committee monitors CSL activities, examinations and curriculum reviews. It is also responsible for overseeing the skills learning programme and is charged with curriculum development roles to ensure congruence between clinical skills and other elements of the curriculum.

Several supporting staff members of the Department of Medical Education were assigned to assist the CSL committee. There is an administrator who is responsible for the

day-to-day operational control and running of the CSL activities. The administrator also monitors the use of the facility as a learning resource. There is a coordinator for standardised patients (actors or volunteers) who is responsible for maintaining a database of standardised patients who will be used for the learning and assessment of clinical skills. Several technicians are available to maintain and ensure the availability of the models, manikins and other clinical diagnostic and therapeutic equipment required for skills learning activity.

The activities in each CSL module are coordinated by the head of the module and an assistant. The teaching staff consists of clinicians from various departments. They provide support for the learning activities. Because the staff members come from different clinical backgrounds, training workshops are organised prior to the start of each semester by the CSL committee to train them on the characteristics of being a 'good teacher.' The workshops also standardise the methods of the delivery of the module contents and an evaluation of the students' clinical skills. Lecturers from the nursing department are also involved in the CSL module as clinical skills instructors of specific procedures. The assistance provided by the Nursing department is valuable because studies have shown that the teachings of nurse tutors in CSL programme were well received by the students.⁵

Early exposure to clinical skills teaching helps to integrate students' knowledge in basic sciences with clinical concepts. This integration enhances students' understanding and interest. The CSL module also equips the students with skills in history taking and physical examination in preparation for their clinical years. It improves students' confidence in clinical skills, such that they become less self-conscious and can give their full concentration in performing their clinical skills. This would translate into an increase in students' problem solving skills, clinical reasoning, competency and action plans.^{6,7} In a study involving several medical faculties, students scored a higher average mark when the CSL module was introduced during the clinical years.⁸

The objective of the study is to determine third year students' evaluation of the CSL module in terms of preparing them for their clinical years.

Material and Methods

The Faculty of Medicine of UKM has a 5-year undergraduate medical programme. The Clinical Skill Learning (CSL) module was first introduced during the preclinical years for the 2005/2006 session of the medical undergraduate curriculum. The CSL focuses on teaching skills in history taking and physical examination and allows clinical learning to occur in a safe classroom setting. Prior to 2005, these basic clinical skills were taught in an intensive 8-week course before the students entered their third year.

The students were divided into several small CSL teaching groups, with each group consisting of eight to ten students, which was facilitated by a clinical lecturer. Each CSL session was conducted every fortnight, with each session lasting for 3 h. The CSL sessions used various learning methods, including demonstrations, video-watching, role-playing and interactive sessions with standardised patients and patients

in the UKM Medical Centre. In addition, CSL also incorporates concept lectures on ethics, history taking and physical examination.

A typical CSL session involved the viewing of an instructional video before breaking up into smaller groups. Clinical instructors subsequently briefed the students and observed their individual performance of history taking and physical examination. History taking is obtained by role-playing or with simulated patients. Physical examination is performed on volunteers and simulated patients. At the end of the session, learning issues were discussed and feedback was given to the students by their peers and mentors.

A questionnaire was selected as the method of data collection because of the ease in which it could be administered to the new third year medical students with a minimal disruption to their learning activities. The questionnaire was designed to gather quantitative data that could be subjected to further statistical analysis. After obtaining consent from the third-year medical students, we distributed the questionnaire to the students in a lecture theatre. They were required to complete the questionnaire during one sitting. These students had undergone the CSL modules during their first and second year of study and had recently completed their first clinical rotation in third year ($n = 220$), which involved a 3-month posting. The questionnaire required little time to complete. The questionnaire explored the students' perception on how adequately the CSL module prepared them for their education in a clinical environment. It was designed to obtain information on the usefulness of CSL and whether it had helped them to improve their clinical skills and enhance their confidence during their third year clinical postings.

The questionnaire had been previously piloted on the third-year students and had a good test–retest correlation and internal consistency, which resulted in an acceptable Cronbach's alpha coefficient value of 0.67. The construct validity and hypothesis validity of the questionnaire were assessed by a panel of experts, which consisted of 3 medical lecturers with different specialty backgrounds: a medical education expert with a post-graduate medical education degree, a health statistics expert and a general physician, who had more than 5 years of experience in running the CSL module. Each panel member performed an independent assessment and provided suggestions for improvements. Any disagreements were discussed among the panel members and all changes had to be unanimously agreed upon to be implemented.

There were eight close-ended questions with a five-point Likert scale. The questions were phrased positively, and the students were required to choose one of the five levels of agreement: 'Strongly disagree,' 'Disagree,' 'Uncertain,' 'Agree' and 'Strongly agree.'

At the end of the questionnaire, there was an open-ended question asking the students' opinion about the benefits of CSL and for suggestions to improve the CSL module.

Statistical analysis

Data were analysed using SPSS for Windows™ 19.0. The reliability of the questionnaire was tested for internal consistency using Cronbach's alpha coefficient. The internal consistency was acceptable with an alpha value of 0.67. The

five criteria for agreement were then given a score of 0 (Strongly disagree), 1 (Disagree), 2 (Uncertain), 3 (Agree) and 4 (Strongly agree). The marks of the eight items were then summed to obtain an aggregate score of the students. The total scores were categorised as poor perception for 0–19 marks; average perception for 20–29 marks; and good perception for 30–40 marks.

Results

Out of the 220 third year-students, 137 students completed and returned the questionnaire with a good response rate of 62.27%. Among the students who completed the gender information, the majority were females (female: male = 77: 35). Twenty-five students did not provide answers regarding their gender.

Approximately 124 (90.5%) students agreed (i.e., answered 'agree' or 'strongly agree') that CSL was a useful module for first and second year students, with no students disagreeing. Similarly, 126 (92.0%) students agreed that CSL was a useful foundation for their clinical years. Only one student disagreed. Approximately two-thirds (101) of the students agreed that CSL helped them to adapt to the clinical learning environment.

In terms of confidence and preparation for clinical years, approximately 95 (69%) students positively perceived that CSL gave them confidence to approach their clinical supervisors, while the remaining one-third were uncertain or disagreed. CSL also prepared 74% of the students to approach patients in a real-world clinical setting.

Approximately two-thirds or 90 (66%) of the students were confident to perform history-taking and examination on patients independently. They became more confident if they could perform the tasks in groups or with a partner, as shown by the 112 (91.8%) and 113 (92.5%) students who agreed with these statements, respectively.

In summary, more than 65% of students responded with 'agree' or 'strongly agree' for all of the items in the questionnaire. None of the students responded with 'strongly disagree,' except for one student for the statement 'CSL provides me with the confidence to approach my clinical supervisors' (Table 1).

When their responses were categorised into poor, average or good perception, 97 (70.8%) students were categorised as having a good perception on the effectiveness of CSL in preparing them for clinical years. The remaining 40 (29.2%) students reported an average perception. None of the students responded in the poor perception category (Figure 1).

For the open-ended question, 45 out of the 137 students who completed the questionnaire gave comments on the benefits of the CSL module and suggestions on how to improve CSL. Most of the suggestions by the students included an increase in the frequency of CSL sessions with real patients in the ward. There were 11 comments that CSL provided exposure to clinical skills, 3 comments that it prepared them for their clinical years and 2 comments that it helped them to adapt to their clinical years. In terms of suggestions to improve the CSL module, 14 students wrote that there should be more opportunities to practice on patients.

Table 1: Students' perception of the CSL module. Number and percentage (%) of students who strongly agree, agree, are uncertain, disagree and strongly disagree with the evaluation statements on the CSL module.

| | Strongly disagree | Disagree | Uncertain | Agree | Strongly agree |
|---------------------------------------------------------------------------------|-------------------|----------|-----------|-----------|----------------|
| CSL is a useful module for first and second year students | 0 | 1 (0.7) | 12 (8.8) | 81 (59.1) | 43 (31.4) |
| CSL is a useful foundation for my clinical years | 0 | 0 | 11 (8.0) | 87 (63.5) | 39 (28.5) |
| CSL helps me in adapting to the clinical learning environment | 0 | 6 (4.4) | 30 (21.9) | 73 (53.3) | 28 (20.4) |
| CSL provides me with the confidence to approach my clinical supervisors | 1 (0.7) | 7 (5.1) | 34 (24.8) | 74 (54.0) | 21 (15.3) |
| CSL prepares me to approach patients | 0 | 6 (4.4) | 30 (21.9) | 82 (59.9) | 19 (13.9) |
| CSL makes me confident to perform history taking and examination alone | 0 | 9 (6.6) | 38 (27.7) | 73 (53.3) | 17 (12.4) |
| CSL makes me confident to perform history taking and examination in a group | 0 | 4 (2.9) | 21 (15.3) | 90 (65.7) | 22 (16.1) |
| CSL makes me confident to perform history taking and examination with a partner | 0 | 3 (2.2) | 21 (15.3) | 89 (65.0) | 24 (17.5) |

Discussion

The students' perception on the relevance of the CSL session is very important because it was designed to prepare them for learning in their clinical years. Since its introduction in the medical curriculum during the 2005/2006 session, minor modifications have been made to the module for improvement. As a continuing process of evaluation and improvement, this study was performed to determine the students' perception of CSL. Third year students who had recently completed one clinical posting in their first clinical year were chosen as the target group as they had just completed the CSL module and would be the best respondents to give their opinions regarding the CSL module.

It is clear from the questionnaire analysis that the students agreed that the CSL sessions prepared them for their clinical

years (based on their current experience in a real-world clinical setting). A majority (90%) of the respondents agreed or strongly agreed that the CSL module was useful for their preclinical-year students. Similarly, approximately 126 (92%) students agreed or strongly agreed that CSL was a useful foundation in preparation for their clinical years. None of the students disagreed, while only 11 (8%) were uncertain of the statement. This illustrated that CSL was well-perceived by the students. Other studies have reported that most preclinical year students thought that it was useful to introduce clinical skills in the early years of their curriculum.^{3,9,10}

More than 70% of the respondents agreed or strongly agreed that CSL helped in their adaptation to the clinical environment. During the CSL sessions, students have the opportunity to visit patients in the teaching hospital to practise history taking or perform a physical examination. During their hospital visit, they are given an introduction and orientation to the ward. Thus, the preclinical students are exposed to the ward environment even before their clinical years. The time spent in the wards should help them to adapt to the clinical learning environment when they enter the clinical years. It is believed that with early exposure to the ward, students can obtain an impression of what it is like to be a doctor, and feel better prepared for their clinical studies in subsequent years.^{9,10} In this study, the majority of students found that CSL provided good exposure to clinical skills, which was supplemented with positive comments. It has been reported that when early clinical exposure, including hospital visits, was used in teaching medical sciences for first year medical students, they perceived the early clinical exposure to be valuable.¹¹

There is a small percentage (4%) of students who disagreed that CSL helped in adapting to the clinical environment. The questionnaire items with the most disagreements were related to confidence, such as to approach their clinical supervisors and to perform history taking and physical

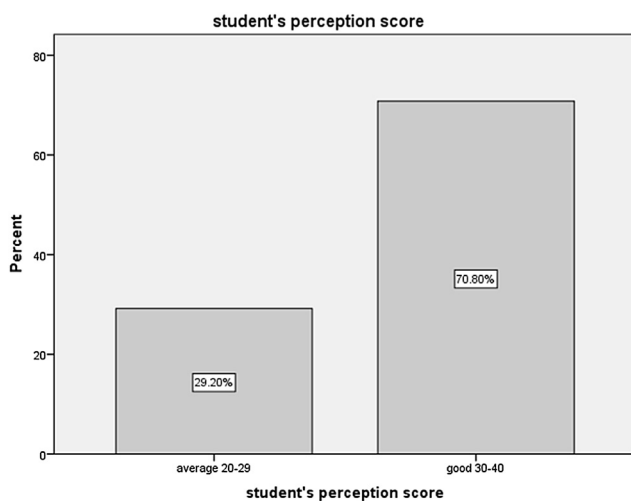


Figure 1: Students' perceptions were summed and scored according to poor perception, average perception and good perception.

examination alone. On the basis of the open-ended question feedback, we were able to deduce that most disagreements were due to students who felt in need of more CSL sessions, particularly those who desired to interact with real-life patients. Students also commented that the visits to the hospital was not sufficiently frequent. Most medical educators agreed that clinical skills are best taught in hospitals with the clinical supervisors directly observing clinical encounters between the students and patients.^{12,13} However, it was not possible to have more frequent hospital visits for our students because they require transportation from the city centre campus to the teaching hospital. They may also have to compete with the clinical year students to clerk patients in the wards. However, because most of the suggestions by the students were to have more hospital visits, we may need to devise a mechanism to increase patient encounters.

During their hospital visits, the students usually meet patients in pairs so that they can help each other learn. This so-called 'peer-assisted learning' has been positively accepted by the students and is an efficient strategy of reinforcing basic learning.¹⁴ This method of learning has been adopted by many undergraduate and postgraduate programmes. It allows senior students to assist their junior colleagues with teaching and learning support.^{15,16}

The aim of the hospital visits is to prepare students on how to approach patients during their clinical years. Based on the questionnaire response, this objective was achieved, as most of the students agreed or strongly agreed that CSL prepared them to approach patients. At least one student commented that 'CSL builds confidence to be in front of the patients'. Approximately 36 (25%) students who were uncertain or disagreed with the statement might be students who felt that the frequency of hospital visits was not sufficient.

The questionnaire item concerning whether CSL makes them confident to perform history-taking and examination individually, a higher percentage of students (34.3%) were uncertain or disagreed with this statement. The percentage of students who disagreed was the highest for this statement. The percentage of students who answered 'uncertain' or 'disagree' decreased to approximately 25 (18.2%) and 24 (17.5%) students when responding to the questionnaire item 'CSL makes me confident to perform history taking or examination in a group' and 'CSL makes me confident to perform history taking or examination with a partner', respectively. This reflects the level of confidence that they gained from meeting patients in pairs during the CSL sessions.

Peer-learning is defined as 'the acquisition of knowledge and skill through active helping and supporting among status equals or matched companions'.¹⁷ Through the concept of peer-learning, a partnership in learning can be fostered between students.¹⁸ Peer-assisted learning is a form of peer-learning that is suitable to be used in both skills labs and in clinical settings for technical skills, history taking and physical examination.^{19,20} The use of peer-assisted learning in the clinical setting reduced the students' anxiety and increased their confidence.^{21,22} However, many studies describe that the relationship of peer-assisted learning is between senior or higher level students who assist their junior or lower level colleagues with teaching and learning support.

CSL training in pairs, as practiced by our students, more closely resembles dyad training, another form of peer-learning.

Studies have shown that dyad training is an effective and efficient way to train complex motor skills in non-medical areas.^{23–26} Recent studies on simulation-based training of a complex clinical skills confirmed that dyad practice was more efficient compared to single practice.^{27,28} Clinical training in pairs or dyad training was reported to be more effective and efficient compared to training alone. Furthermore, it has positive effects on the students' confidence in managing the patient encounters.²⁹ This was consistent with our findings that students have more confidence when performing history taking or an examination with a partner.

Clinical supervisors make an invaluable contribution to the education of medical students in the clinical setting.^{30,31} Most of the students agreed or strongly agreed that CSL modules gave them confidence to approach their clinical supervisors during their third year of study. During their CSL modules in the preclinical years, the students were facilitated by clinical lecturers, most of whom were also supervisors of the clinical students. Student-facilitator interactions during the CSL modules provided the students with the opportunity to learn how to communicate with the clinicians and simulated a proper working environment. The CSL facilitators for each group are rotated every semester, and this further enhances the students' communication skills and interactions with clinicians of different speciality backgrounds and personalities. This would have certainly prepared the students to approach their supervisors in the clinical years to ask questions or to participate in discussions. However, there was one student who strongly disagreed with this statement. No suggestion or comment was given by this particular student. He or she may have had negative experiences with the CSL facilitator, which prompted this negative response. Student feedback is very important because clinical supervisors regard the feedback to be a very credible reflection of their performance.^{32,33}

Overall, a good majority (70.8%) of the students had good perceptions on the CSL module. The remaining students had an average perception, while none of the students had a poor perception. This finding demonstrated that CSL was well-perceived by all of the students.

There is a limitation to our study. The third-year students completed their first clinical posting of either Medicine, Surgery, Obstetric and Gynaecology or Community Health. Their learning experience in these clinical postings may affect their perception towards CSL teaching in their pre-clinical years. However, we felt that the students should have completed at least one clinical posting to allow for an adequate reflection and assessment of CSL usefulness during their clinical years. Similarly, we could have performed this study on students after the completion of the first clinical year to allow for the implementation of the knowledge gained during CSL across different clinical postings and to also minimise the differences in student experience bias. However, we decided against this as the students might have recall bias, which would severely affect the accuracy of the results.

Conclusions

The CSL module was perceived by medical students as being instrumental in preparing them for their clinical years.

CSL is a vital part of the pre-clinical curriculum and should be further enhanced by having more hospital visits to enhance students' confidence level and performance when interacting with patients during their clinical years. All students had a positive perception towards their training in CSL. Peer-assisted learning may be another form of peer-learning, which can be applied to enhance the learning of CSL.

Conflict of interest

The author reports no financial or other conflict of interest pertaining to the subjects or products discussed in this article.

Authors' contributions

ANS and INM made contributions to the conception and design of this study, acquisition and analysis of data, and drafting/revising the manuscript. MNY made contributions to the study design, data analysis, and drafting/revising the manuscript. RAAK made contributions to the study design, data analysis, and drafting/revising the manuscript. RIH, SNO, AMN, AU, FD and RAM made contributions to the study design and drafting/revising the manuscript. All of the authors read and approved the final manuscript.

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