

Peer assessment approach to promote clinical communication skills in a blended learning course of early clinical exposure

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Abstract

Background: Blended learning offers opportunities for the complexity of learning in clinical education. Student peer assessment is widely used as a form of formative assessment in early clinical exposure programs, especially clinical communication skills training. This study aimed to describe clinical communication skills competencies of second-year students and to identify the relationships between peer and faculty assessment of communication skills in a blended learning program format. **Methods:** A total of 474 second-year general medical students and dental students participated in the study. Peer and lecturer assessment forms with a 5-point Likert scale according to the Calgary-Cambridge guide format were used to evaluate students' performance of basic communication skills, relationship building, and history taking. Pearson's correlation coefficients and paired t-test were applied. A p-value < 0.05 was considered statistically significant. **Results:** Most of students were rated at distinction level (score at 7-8.4) in communication skills. Mean of the overall score by peer and faculty assessment were 7.46 ± 1.03 and 7.17 ± 0.68 , respectively. Peers rarely provided negative ratings on subcategories of communication skills. Skills of understanding the patient's perspectives and gathering information were the most reported skills needed to improve among students. Significant positive correlations were found between peer and faculty evaluations for building relationship, establishing initial rapport, and gathering information domains ($p < 0.01$). Students tended to grade their colleagues higher for building relationship (3.88 ± 0.62) and establishing initial rapport domains (3.72 ± 0.61) than other domains, meanwhile, teachers tended to grade building relationship (3.80 ± 0.55) and gathering information domains (3.64 ± 0.38) higher than other domains. **Conclusion:** The findings suggest that student peer evaluation can be valuable for clinical education. As part of a formative assessment, it can be also used for faculty to evaluate students' clinical communication skills performance in innovative medical education programs.

Keywords: peer assessment, clinical communication skills, practice of medicine, early clinical practice, blended learning.

1. INTRODUCTION

Communication has been identified as one of the core clinical skills for all healthcare providers, especially primary care physicians. Primary care provides the first contact point services which follow a patient-centered approach, maintaining relationship with the patient from time to time through effective communication, and solving patients' health problems holistically which covers physical, psychological, social, and cultural aspects, and other shared concerns. Towards global trends in medical education, since 2015, the Vietnam Ministry of Health committed to a national reform of undergraduate medical education grounded in competency-based medical education [1]. This reform refocuses medical education from

the traditional approach of medical knowledge acquisition to training towards the achievement of competencies based on population health needs. One of the most achievements of medical reform is the accomplishment and integration of early clinical exposure (ECE) in the medical curriculum through having students learn communication skills, professionalism, and history-taking through experiences with patients in primary care settings prior to starting their clerkships [2, 3, 4]. With the ECE program, students are well-prepared with a variety of clinical activities before their clerkships and internships.

The medical education reform also brings out innovation in teaching-learning methods and technology. Blended learning, a learning approach

that combines face-to-face classroom lectures and e-learning, has grown rapidly to be commonly used in medical institutions, especially in the local medical universities where there is a lack of qualified teachers and instructional materials. Previous studies have documented the benefits of this innovative teaching-learning approach in transforming the standard clinical skills curriculum to increase learning transfer to bridge the theory-practice gap [5]. Moreover, in dealing with the lack of qualified teachers and clinical preceptors, student peer evaluation has been used as a form of formative assessment to reduce the considerable gap in knowledge between a student and his teacher in favor of a relatively smaller gap between students who help each other to learn [6,7]. According to Gielen (2007), peer evaluation has five main goals: the use of peer assessment as an assessment tool and learning tool, the installation of social control in the learning environment, the preparation of students for self-monitoring and self-regulation in lifelong learning, and the active participation of students in the classroom [8]. Thus, peer evaluation can be a valuable source of information to assist in the professional and personal growth of both the evaluator and the evaluatee.

Previous studies affirm peer evaluation as a reliable method for assessing the humanistic/psychosocial dimensions of clinical performance [9, 10]. Nevertheless, concerns have been raised about the accuracy and validity of this evaluation method as a formative or summative evaluation tool and its influence due to the degree of objectivity provided by students [11]. This study presents a peer assessment approach to evaluate students' performance of clinical communication skills in a blended learning course format. This study aimed to assess the reliability and validity of the peer review process and the discrepancies in ratings between faculty evaluations and student peer evaluations.

2. METHODS

2.1. Study design: A cross-sectional descriptive study was conducted in a semester of clinical communication skills training in the Practice of Medicine (POM) module.

2.2. Study population and setting

Hue University of Medicine and Pharmacy (Hue UMP) is one of five medical universities in Vietnam promoting medical education reform through USAID's Improving Access, Curriculum, and Teaching in Medical Education and Emerging Diseases (IMPACT-MED) Alliance. Two curricula of the training

programs for general doctors and dentists have initiated complete reforms toward a competency-based education approach. The POM module is developed for the first time at the university and introduced students to the concept of early clinical exposure. The POM course begins with an intensive focus on developing communication skills, which includes active learning on the learning management system - LMS, interactive didactic lectures, small group (3 students) and large group (13-14 students) sessions, panel discussions, role play sessions with peers and simulated patients. Students are expected to explore the patient-doctor relationship and apply interviewing skills that demonstrate establishing rapport, collecting accurate data, and understanding the patient's perspectives. The Calgary-Cambridge guide to the medical interview was developed by Silverman, Kurtz, and Draper to delineate effective patient-doctor communication skills and to provide an evidence-based structure for their analysis and teaching. A rubric based on the Calgary-Cambridge guide was produced for learning-teaching activities, as well as faculty, peer, and self-evaluation of performance in a clinical interview. A total of 474 second-year general medical students and dental students enrolled in the module in the school year 2019 - 2020 were invited to participate in the study.

2.3. Data collection

Participation and completion of the peer assessment were required, and students were informed about the process of peer assessment and the use of the peer assessment scale at the beginning of the training session. Students understood that the information from student peer evaluations would only be used as formative evaluation and thus would not affect students' overall grades in this session. Students were informed their evaluation would have no impact on the course grade of the student being evaluated. Faculty provided and reviewed the checklist of the Calgary-Cambridge guide with the students before implementing the student peer evaluation process. Students were given training with peers and simulated patients in basic communication skills, relationship building, and history taking. Student peers were required to mark each of the other members of the 3-student team when they practiced role-playing with a scenario. Meanwhile, faculty provided evaluation when their peer practiced with the simulated patient. Students also gave their general opinion on the skills in which their peers performed the best and the skills that needed to be improved. After the assessment, the faculty shared average peer evaluation scores confidentially

with each student.

Instrument: Peer and lecturer assessment forms with a 5-point Likert scale (1=poor, 2=fair, 3=good, 4=very good, 5= excellent) were used for data collection. The tool was based on the Calgary-Cambridge guide to the medical interview with four domains: “building relationship”, “establishing initial rapport”, “gathering information”, and “understanding the patient’s perspectives”. To grade the performance of students, the total score of the assessment tool was calculated by the sum of scores of all items in the assessment tool converted on a 10-point scale.

2.4. Statistical analysis

Descriptive data are shown as proportions for categorical variables and mean $\pm$ standard deviation for scaled responses. Statistical comparisons

between groups were made using Pearson’s correlation coefficients and paired t-tests. A p-value < 0.05 was considered statistically significant.

3. RESULTS

3.1. Differences between student peer and faculty evaluations of communication skill performance

Overall, most of the students achieved a distinction level of communication skills with the score ranging from 7 - 8.4. The mean peer rating score (7.46 ± 1.03) was statistically significant difference ($p < 0.001$) from the instructor evaluation score (7.17 ± 0.6). The proportion of students with excellent scores of communication skills rated by student peers was higher than that rated by faculty, 18.3% and 3.0%, respectively.

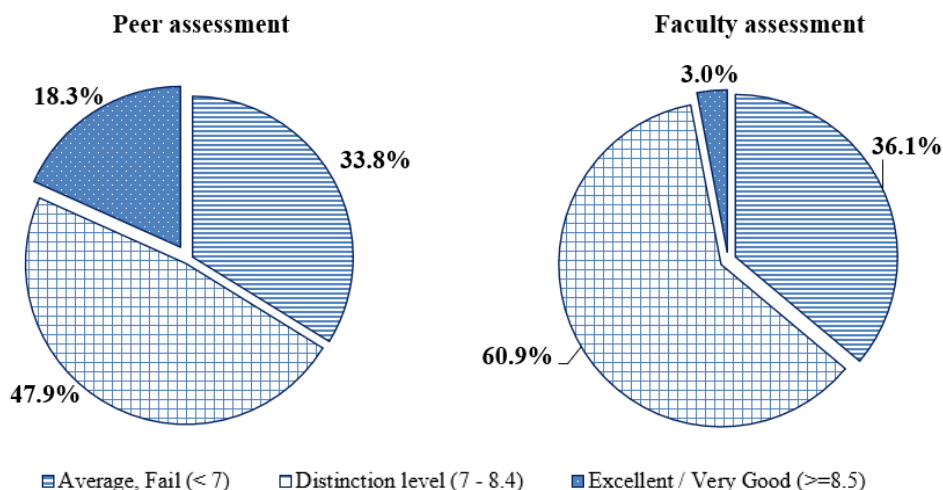


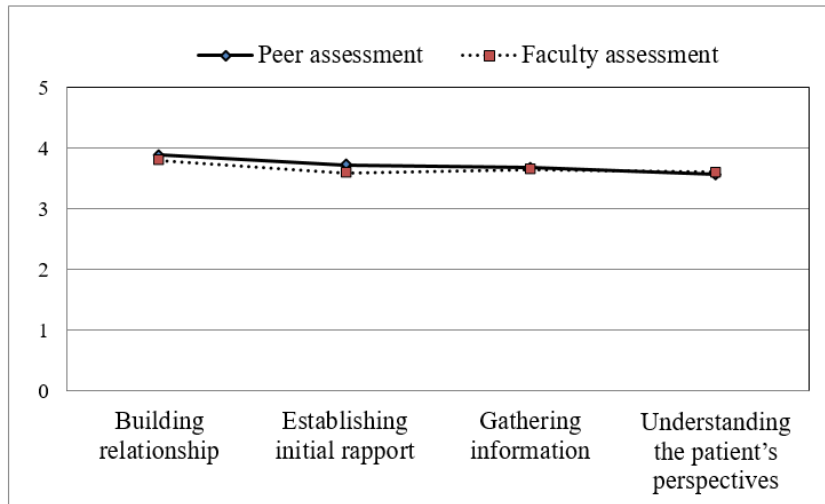
Figure 1. Mean Ratings by Student Peers and Faculty

Analyses were also conducted to determine whether there were differences between student peer and faculty evaluations of clinical performance and if so, what those differences were. Paired t-tests were used to determine statistically significant differences for each domain. The differences in assessment scores between peers and instructors are shown in Table 1. There were statistically significant differences between the two groups in all domains of communication skills ($p < 0.05$), with the exception of “gathering information” domain ($p > 0.05$). Students tended to grade their peers higher for the “building relationship” (3.88 ± 0.62) and “establishing initial rapport” ($3.72 \pm$

0.61) domains than for the “gathering information” (3.68 ± 0.57). The faculty tended to grade students higher for the domains of “building relationship” (3.80 ± 0.55) and “gathering information” (3.64 ± 0.38) than for the domains of “establishing initial rapport” (3.59 ± 0.39). Among the four domains, the “understanding the patient’s perspectives” received the lowest evaluation scores by both student peers and faculty (3.57 ± 0.66 ; 3.36 ± 0.55 , respectively). Figure 2 displays the mean ratings by student peers and faculty in response to each domain. It seems that the differences between the scores given by students and by the faculty are very low.

Table 1. Differences in assessment scores between peers and faculty

Domains	Peer assessment Mean (SD)	Faculty assessment Mean (SD)	t-value	p-value
Building relationship	3.88 (0.62)	3.80 (0.55)	2.0	0.046
Establishing initial rapport	3.72 (0.61)	3.59 (0.39)	4.02	0.000
Gathering information	3.68 (0.57)	3.64 (0.38)	1.6	0.11
Understanding the patient's perspectives	3.57 (0.66)	3.36 (0.55)	5.71	0.000

**Figure 2.** Mean Domain Ratings by Student Peers and Faculty

3.2. Correlation between peers and faculty evaluation over 4 domains

Table 2 presents Pearson correlation coefficients for peer and faculty evaluation scores. Significant positive correlations were found between peer and faculty evaluations for all of the domains. Accordingly, students who received high scores from faculty also received high scores from peers; likewise, students who received low scores from faculty also received low scores from peers. The strongest correlation between the two groups was observed in “understanding the patient’s perspectives” domain ($r = 0.203$, $p < 0.01$), followed by “establishing initial rapport” domain ($r = 0.181$, $p < 0.01$).

Table 2. Correlation between peers and faculty evaluation scores over four domains

Faculty	Domains	Peers			
		Building relationship	Establishing initial rapport	Gathering information	Understanding the patient's perspectives
Building relationship		0.167**			
Establishing initial rapport			0.181**		
Gathering information				0.175**	
Understanding the patient's perspectives					0.203**

** $p < 0.01$, * $p < 0.05$

Table 3. General remarks of students on their peers' performance

Communication skills domain, n (%)	Students performed the best at...	Students need to improve on...
Building a relationship	278 (58.6)	80 (16.9)
Establishing initial rapport	119 (25.1)	108 (22.8)
Gathering information	216 (45.6)	168 (35.4)
Understanding the patient's perspectives	125 (26.4)	233 (49.2)

The skills identified by students in response to the question asking them to detail the skills their peers performed the best were in line with these skills which they thought their peers needed to improve (Table 3).

4. DISCUSSION

Peer assessment is being used increasingly to evaluate professional competence in medicine and other healthcare-related fields. This study supports the use of student peer evaluation as part of a formative assessment in evaluating students' clinical performance in a blended learning course. Results of this study illustrated a high degree of agreement among evaluators which showed a strong correlation between peer and instructor assessment scores on "building a relationship", "establishing initial rapport", "gathering information", and "understanding the patient's perspectives". These results support previous findings that student peer and instructor evaluations of students' clinical performance show a tendency to be consistent [12]. In an analysis of 30 studies in higher education, Topping [13] found that 25 studies reported a high correlation between faculty and student peer evaluation scores. Likewise, Falchikov and Goldfinch [14] also conducted a meta-analysis of 48 studies and found that peer evaluation results showed similarity with faculty evaluation results. This evidence confirms that peer evaluation can be used as a reliable tool to improve the effectiveness and quality of learning.

Peer assessment motivates students' active learning during the learning process, enhances self-awareness, facilitates personality development, and promotes teamwork skills as well as their understanding of the assessment criteria used in a course [15]. Furthermore, some studies indicate that peer evaluation will help students develop the ability to provide and accept constructive feedback and teaching competency in the future [14]. Students can identify their own strengths and weaknesses as compared with self, peer, and faculty evaluation feedback. To achieve these goals, students must be

oriented to the assessment scale to be used in peer assessment and understand the process by which peer assessment will be undertaken. Instruction must also be provided to students on how to provide constructive feedback to one's peers. Small-group learning courses in which students are learning together in stable groupings for an extended period of time would be the preferred context for applying peer assessment activities.

Peer assessment has been studied in many educational areas. Speyer *et al.* reviewed 28 studies of peer assessment in medical education, many of which studied peer assessment of clinical performance and professional behavior, and only two studies focussed on interview skills [16]. On contrary, a scoping review reported that peer evaluation was used widely for evaluating patient interviewing skills, physical examination techniques, communication skills, and explanation of concepts to patients [17]. The application of peer assessment varies in either summative or formative, formal or informal. In this study, we introduced peer assessment as a formative assessment. The discrepancies between student peers and faculty also drive an argument that when peer evaluation is used as part of the summative evaluation, their ratings may be less reliable because it may falsely inflate the true academic merit of a student's performance. A scoping review of the role of peer assessment in objective structured clinical examinations performed by Khan *et al.* (2017) indicated that such assessment may also be part of summative assessment and contribute to the final score when specific guidance was fully provided on learning outcomes, marking criteria, rubrics, and rating scales [17].

Students tended to grade their mates more generously than the faculty did for all of the domains. The tendency for students to give higher evaluations than faculty has been reported in other studies [9,18,19]. This may be partially influenced by friendship bonds, perception of criticism as socially uncomfortable, fear of harming their peers' grades, and concern about disrupting collegiality.

Additionally, because students spend more time together, they may have different opportunities to observe or review a different set of skills in their peers, while faculty provide an evaluation at one single time during the course. To decrease the potential bias of peer ratings, faculty need to create a supportive and collaborative learning environment to facilitate and support the process of student peer evaluations and ensure the anonymity of those providing the feedback. In a systematic review of 31 studies, Lerchenfeldt *et al* (2019) reported that problem-based learning, team-based learning, and interprofessional education were the most common collaborative learning settings for peer evaluation applications [20]. Moreover, blended learning

environments also provide new possibilities to facilitate peer evaluation in medical education nowadays.

5. CONCLUSIONS

Our study indicated a strong correlation between peer and faculty evaluations of clinical communication skills performance in all of the evaluation domains. In competency-based education programs for undergraduate training, student peer evaluation should be emphasized as a formal part of the learning process. Further work should aim to develop a valid and reliable peer evaluation tool and evaluate the usefulness of the tool with large sample sizes.

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