

The use of peer role-play in doctor-patient communication skills training for medical students: A systematic review

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Article Info

Article history:

Received Jun 30, 2021

Revised May 25, 2022

Accepted Jun 21, 2022

Keywords:

Communication

Learning

Medical student

Physician-patient relations

ABSTRACT

The quality of communication is directly related to patient satisfaction and can influence health outcomes. However, most doctors still have poor communication skills. A systematic literature search in PubMed, Cochrane, and Science Direct was conducted to retrieve studies reporting the use of peer role-play (PRP) for doctor-patient communication skills training in medical students. The quality of each study was assessed using the Joanna Briggs Institute (JBI) critical appraisal checklist. A total of 1,620 studies were obtained from electronic database search and screening of reference lists. After removing irrelevant studies and duplicates, one randomized control trial (RCT) and eight quasi-experimental studies were included in this systematic review. Peer role-play was perceived to be as useful as simulated patients (SP) training methods with comparable post-intervention objective structured clinical examination (OSCE) scores. Majority of students preferred PRP for learning communication skills over didactic lectures. The limitation of this review is the scarcity of eligible studies, high variability in the PRP programs across studies, and the lack of grey literature included. Peer role-play might be a cost-effective method to improve doctor-patient communication skills with comparable results (student's perception and OSCE scores) with the expensive use of simulated patients. However, further study is needed to support this statement.

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1. INTRODUCTION

Doctor-patient communication as a form of interpersonal communication is as essential as daily communication in ways it affects the relationship between the individuals involved. Communication techniques can be used to resolve various kinds of problems encountered in everyday life as how a phrase is conveyed oftentimes is more significant than the actual meaning [1], [2]. The quality of the communication processes is directly related to patient satisfaction and can influence patient compliance, and therefore health outcomes [1], [3]. Efficient doctor-patient communication can also help doctors to elude malpractice lawsuits, reduce occupational stress, and ultimately obtain an accurate diagnosis [4], [5].

Patients were more concerned about respect for patient perspective exhibited by doctors rather than the actual shared decision-making. However, most doctors used disease-centered rather than patient-centered communication (PCC) when working on a diagnosis mostly because of inadequate time due to high patient-load and doctor-patient communication difficulties caused by the doctor's poor communication skills. Patients complained about the lack of eye contact as well as the use of cold tone and medical terms. These made the patients uncomfortable and reluctant to share an honest medical history to the doctors [6].

Fortunately, communication skills can be learned and can always be enhanced [7]. It has been well-established that these skills can be obtained and integrated into further clinical practice with learner-centered communication skills training (CST) with experiential learning methods and structured feedbacks [8]. Methods that offer students practical experience, e.g. peer role-play (PRP) and simulated patients (SP), are more effective than pure didactic lectures because they simulate real doctor-patient encounter [7], [9]. Simulated Patients provide realism as it enables students to communicate with strangers that are trained to enact standardized symptoms and give professional feedback. Simulated Patients method is more expensive and needs more human resources. On the other hand, PRP is a cost-effective method with comparable results. Peer role-play also enables students to experience the standpoint of both the doctor and the patient. This interchange of roles is the key advantage of PRP as doctors need to sense the individual reality of the patient in order to gain empathy and form a functional relationship with the patient [9]–[11].

Several studies have compared the advantages and disadvantages of both methods. Both methods are valuable, well accepted by students, and successfully enhance students' communication skill based on questionnaire about medical student's perception and objective structured clinical examination (OSCE) scores [9], [10]. However, given the expense and resources SP required, PRP might be more practical to use at any faculties, including the low-resourced ones. There have been several studies investigating the use of PRP for doctor-patient communication skills training in the last 10 years [1], [12]–[16] but there is no recent systematic review to consolidate the findings to date. This systematic review provides further evidence to assess whether the use of peer role-play method can improve doctor-patient communication skill based on medical student's perception and OSCE scores.

2. RESEARCH METHOD

This systematic review was performed by doing a comprehensive and systematic literature search in PubMed Central (PMC), Cochrane, and ScienceDirect database. The search was conducted on October 4, 2020 to retrieve studies reporting the use of peer role-play in doctor-patient communication skill training for medical students. The keywords are “(peer[All Fields] AND role-play[All Fields]) AND (“communication”[MeSH Terms] OR “communication”[All Fields]) AND skills[All Fields]) AND (“students, medical”[MeSH Terms] OR (“students”[All Fields] AND “medical”[All Fields]) OR “medical students”[All Fields] OR (“medical”[All Fields] AND “students”[All Fields]))” were designed to be sensitive enough to prevent relevant studies from being omitted out but also specific enough for search efficiency. Screening of reference lists of relevant studies identified was done to get additional relevant studies so that the search was as extensive as possible to reduce the risk of publication bias and to identify as much relevant evidence as possible [17]. All study published in the last ten years were included. No language restrictions were applied.

Inclusion criteria for the articles reviewed are: i) study design, randomized controlled trials and quasi-experimental studies; ii) study population, medical students (in pre-clinical and clinical year); iii) study intervention and comparator, PRP and/or SP; and iv) study outcome parameter, student perception and/or OSCE scores were applied. Studies with irretrievable full-text articles were excluded.

In data collection stage, the two reviewers (BS and RAS) performed data collection independently. For every difference in opinions for eligibility assessments, a consensus was made. After duplicates and inaccessible studies were removed, reviewer screened the titles and abstracts based on pre-determined inclusion and exclusion criteria. Full-text reading was done to assess the eligibility of each article. One reviewer (BS) extracted and analyzed data from included study preceding data verification by another reviewer. Piloted forms were used for extracting the data: study characteristics, population characteristics, communication skills training methods used, data collection tools, and main results (student perception and/or OSCE scores).

Methodological quality of included studies were assessed using the Joanna Briggs Institute (JBI) critical appraisal checklist for randomized controlled trial and quasi-experimental studies [18], [19] independently by two reviewers (BS and RAS) and disagreements were resolved by the consensus of both authors. Moderate to high quality studies were finally chosen to be reviewed. The process of literature search and study selection was depicted in preferred reporting items for systematic review and meta-analysis (PRISMA) flow diagram [20].

3. RESULTS AND DISCUSSION

3.1. Study selection and characteristics

A total of 1643 studies were obtained from electronic searches including 22 additional studies from other sources (screening of reference lists). The search strategies were presented in Table 1. After removing duplicates and inaccessible studies, 1620 titles were screened to remove irrelevant studies that clearly fell

outside the inclusion criteria. There were 44 studies screened for title and abstract. After in-depth inspection of abstracts, a total of 35 studies were excluded: two editorial articles, 10 studies involving residents, interns, or non-medical students only, 19 CST studies with standardized patients only, and four Peer Role-Play (PRP) studies with technical skill training only. There were nine full-text articles assessed for methodological quality. Finally, nine studies were included to be reviewed. Study search and selection were depicted in PRISMA 2009 flow diagram in Figure 1. The summary of extracted data from selected studies was presented in Table 2.

Assessment of methodological quality using JBI critical appraisal showed that the studies generally have high quality. The potential sources of bias are the absence of a control group in most of the studies included and the fact that group allocation concealment and participant blinding are impossible due to the nature of these studies. A total of nine studies including one randomized control trial (RCT) and eight quasi-experimental studies were included in the review.

Table 1. Electronic database search strategies

Databases	Keywords	Filters	Hits	Selected
PMC	(peer[All Fields] AND role-play[All Fields]) AND (("communication"[MeSH Terms] OR "communication"[All Fields]) AND skills[All Fields]) AND ("students, medical"[MeSH Terms] OR ("students"[All Fields] AND "medical"[All Fields]) OR "medical students"[All Fields] OR ("medical"[All Fields] AND "students"[All Fields]))	Publication date: 10 years	890	6
Cochrane	"communication"[All Fields]) AND skills[All Fields]) AND ("students, medical"[MeSH Terms] OR ("students"[All Fields] AND "medical"[All Fields]) OR "medical students"[All Fields] OR ("medical"[All Fields] AND "students"[All Fields]))	Date added to CENTRAL trials database: the last 10 years Word variations have been searched	7	4
ScienceDirect	"medical"[All Fields]) OR "medical students"[All Fields] OR ("medical"[All Fields] AND "students"[All Fields]))	Article type: Research articles Years: 2010–2020	724	0

CENTRAL: The Cochrane Central Register of Controlled Trials

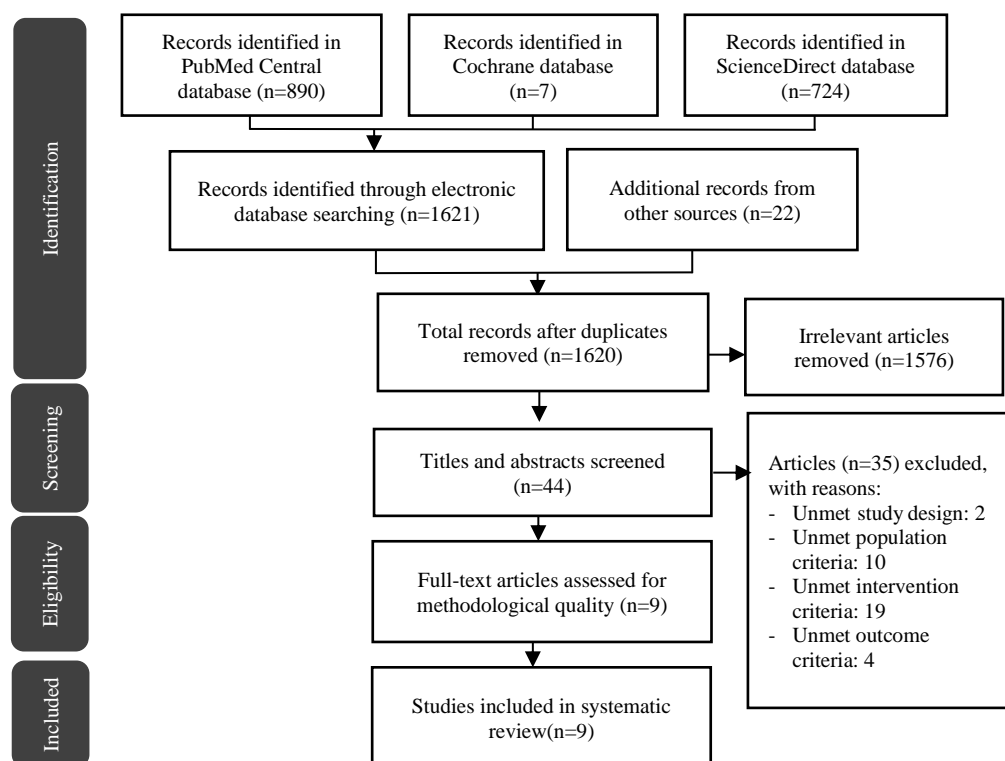


Figure 1. PRISMA 2009 flow diagram of study search and selection

Table 2. Characteristics of studies included in this systematic review

Study	Study designs/ Types	Sample size	CST methods	Data collection tools	Main findings
[9]	Quasi-experimental/ Analytic	64 fifth-year students	RP (n=31) SP (n=33)	Post-questionnaires about students' perception of acceptability, realism, usefulness, and applicability of CST	SP was seen as significantly more useful, applicable, and worthwhile ($p<0.032$, $p<0.009$, and $p<0.003$) than RP.
[21]	RCT/Analytic	92 fifth-year students	RP (n=28) SP (n=32) CG (n=32)	Pre- and post- questionnaires about self-efficacy ratings of communication skills. Post-intervention OSCE scores based on the CCOG checklist.	Self-efficacy ratings significantly increased after RP ($p<0.021$) and SP-training ($p<0.007$) compared to controls, RP and SP methods did not differ ($p<0.704$). Post-intervention OSCE score significantly increased after RP and SP ($p<0.001$ and $p<0.006$) with $RP>SP$ ($p<0.021$) due to significantly higher scores in understanding of parents' perspective domain ($p<0.001$).
[22]	Quasi-experimental/ Analytic	60 fifth-year students	RP (n=28) SP (n=32)	Post-intervention OSCE scores based on CCOG checklist	A significant difference of post-intervention OSCE score after RP and SP ($81.6\% \pm 3.32\%$ and 78.0 ± 6.23 ; $p=0.021$).
[1]	Quasi-experimental (One-group posttest-only)/ Descriptive	470 junior- year medical students	RP	Post-questionnaires about observed doctor- patient communication skills filled by peer- observer and student perception on PRP filled by students in doctor role	Students in doctor's role described the RP courses by stating that, "It was a really enjoyable class;" "We really felt like doctors;" "Being a doctor is not as easy as I previously thought;" "Communication is really important after all," "We really liked this activity;" and "I wish other classes were like this."
[12]	Mixed-method (Quasi-experimental and focus groups)/ Analytic- descriptive	132 second- year medical students; 19 students participate in focus group interviews	SP (n=44) RP (n=45) TIE (n=43)	Post-questionnaires about student perception about PRP, Communication Skills Attitude Scale (CSAS), and additional open- ended questions Post-intervention focus group interviews	No statistically significant differences ($p=0.110$) were found in students' perceptions of RP, SP, and TIE. Students' positive attitude scale (PAS) to learn communication skills improved significantly ($p=0.000$), and their negative attitude scale (NAS) diminished significantly ($p=0.000$) with no statistically significant differences between three groups ($p=0.115$ and $p=0.129$). All three methods resulted in similar students' self-reported learning outcomes.
[13]	Quasi-experimental (One-group pretest- posttest)/ Descriptive	96 fifth-year students	RP	Pre- and post- questionnaires about perceived importance of communication training. Post-questionnaires about students' general perceptions and perceived benefits of RP	More than 90% of the students completely/partly agreed that the RP concept was innovative, worthwhile, satisfying T/L tool, useful for CST. More than 80% of the students reported this RP sessions' benefits to help them acquire doctor-patient communication skills. The perceived importance of communication skills increased from 19.8% extremely important to 76% after RP sessions.
[14]	Quasi-experimental study (One- group pretest- posttest)/ Descriptive- analytic	182 second- year medical students	RP	Pre-questionnaires about students' perception and expectations of RP. Post-questionnaires about students' self- report learning progress and attitudes toward RP.	The majority (88.5%) of the students was satisfied with the sessions and 85.0% felt that their expectations had been met. The instructors' (91.9%) and peer-feedback (91.2%) were identified as constructive and helpful. There is an increase of 10.6% (91.4% after RP session) in students preferring RP for learning doctor-patient communication than being instructed by a teacher.
[15]	Quasi-experimental (One-group posttest only)/ Descriptive	198 first- year medical students	RP	Post-questionnaires about student perception about PRP	There were 80% of students considered the teaching session useful and 69% strongly agreed tutors facilitated their development.
[16]	Retrospective quasi-experimental/ Analytic	330 second- year medical student OSCE data	RP (n=182) SP (n=148)	Post-intervention OSCE scores	SP group demonstrated significantly better OSCE outcomes ($p<0.01$). However, the impact on total OSCE score (72.75 ± 0.302 vs. 74.52 ± 0.336 , Cohen's $d=0.32$) was within a low-moderate effect size range, meaning that the difference was trivial.

CCOG: Calgary-Cambridge Referenced Observation Guide; p value=0.05; RP: role-play; SP: standardized/simulated patients;
TIE: theatre in education; T/L: teaching-learning

3.2. Peer role-play method for communication skills training

There were four one-group quasi-experimental studies assessed PRP CST with no comparison group. Students enjoyed and were satisfied with the course [1], [13]–[15]. They perceived the RP session as useful for CST [13], [15]. Majority of students preferred RP for learning doctor-patient communication over didactic lectures [1], [14]. Communication skills training with experiential learning methods (PRP and SP) allows students to experience simulated real doctor-patient encounters and rehearse different clinical scenarios while still being exciting and enjoyable for the students [8]. Experiential learning methods are superior because the construction of knowledge occurs when students reflect on and attempt to make sense of their experiences [23], that is why these methods are also preferred by most students over usual passive, lengthy learning methods: written curriculum, didactic lectures, oral instructions [1], [14], [24].

Students highly accepted RP method of training [9], [12]. This might be because of students' enjoyment of actively taking a doctor's role and observing their peers doing that. Students indeed enjoyed and were satisfied with the course [1], [13]–[15], [25], [26]. Both forms of training were also perceived as highly realistic. It might have been caused by a "high degree of challenge" as well as critical-decision moments experienced when students take parts in the simulation and directly exposed to clinical and communication problems demonstrated by SP or peers in the patient role [27], [28]. Realistic aspects of both methods are critical because similar to real-life situations give students foresight to prepare themselves for such situations [1], [29].

The majority of students perceived the RP session was useful for CST [13], [15], [30]. This result is in accordance with the previous study [31]. This might be because RP allows the student to sense which domain they needed to develop and improve themselves in a 'safe and professional' environment (with their friends) without feeling under any pressure. This is important as doctors and patients are equal, and the communication should be based on mutual respect and trust [1], [9], [32]. Direct participation in an active learning environment encourages learning. Role-play was also reported to induce behavior modification, improvement of decision-making, and professionalization among individuals working in education, military, and health-care service areas [1], [33], [34].

3.3. Peer role-play versus simulated patients based on student perception

There were five studies [9], [12], [16], [21], [22] compared the use of PRP with SP for CST, two of the studies reported that both training methods were highly accepted [9], [12], but SP was seen as more useful for CST, worthwhile, and applicable [9]. This is consistent with the past study that students evaluated SP more favorably than RP [35]. This might be due to professional feedback given by experienced SP. A detailed display of students' skills is indeed needed to improve some particular areas students still have not mastered. In the study [9], the population was fifth-year medical students, so previous SP exposure could not be avoided. Students might have already got used to SP, while RP was a new method for them. In addition, most SPs are trained to emphasize the patient's inner perspective while untrained peer taking the patient's role spotlight accurate and detailed clinical symptoms instead. The preconception that SPs were well-trained and proficient because they were expensively paid for the sessions also might contribute to students' perception of the SP method. However, another study reported that there was no significant difference in student-rated applicability of both methods [36].

Self-efficacy ratings of communication skills significantly increased after RP ($p < 0.021$) and SP sessions ($p < 0.007$) compared to controls, with no difference in RP and SP methods ($p < 0.704$) [21]. This is in accordance with a previous study reporting that CST improved doctors' self-efficacy by 37% [37]. Another study also reported medical students' self-efficacy improvement after inter-professional communication skills course [38]. However, self-efficacy mostly reflects the student's self-confidence and is fundamentally subjective. The student in RP and SP groups were more confident mostly because they have already actively participated, practiced their communication skills, and observed communication scenarios in the course. In any case, self-efficacy is not suitable for objectively assessing one's communication skills.

3.4. Peer role-play versus simulated patients based on OSCE scores

One RCT conducted by Bosse *et al.* reported higher post-intervention OSCE scores in the RP group ($p < 0.021$), mostly due to significantly higher scores in understanding of parents' perspective domain ($p < 0.001$) [21]. As many studies suggested, RP fosters an empathic and patient-centered approach. Peer role-play enables students to see from both the doctor's and the patient's point-of-view. It enables students to experience the ambiguity of communication situation from the patient's perspective. This acts as the key advantage of PRP as doctors need to sense the patients' reality to understand what the patients' main concerns are as well as to gain empathy in order to form a functional relationship with the patient [9]–[11].

On the contrary, a retrospective quasi-experimental study using secondary data (OSCE scores) [16] showed a significant but trivial difference in post-intervention OSCE scores with the SP group ($p < 0.01$,

Cohen's $d=0.32$) scored higher than RP group. This might be caused by a potential performance bias of the SP group because the assessment (OSCE) was carried out with the same tool (SP). It might also be due to the major time difference between the two groups' intervention (RP group in 2014 and SP group in 2016), causing a higher risk of confounding factors intervening in the results. The effect size reported within a low-moderate effect size range, meaning that the difference was trivial even if it was statistically significant [16].

However, RCT with validated instrument [39] reported no significant performance differences between RP and SP training groups based on videotaped interviews quality assessment. Another study also reported no significant difference between post-intervention OSCE scores in both groups ($p=0.64$) [40]. The variability of the results might be because of the high variability in the PRP programs across the studies.

Peer role-play is an experiential learning method with learners playing out roles based on given scenarios [41]–[43]. It is a relatively easy-to-applied training tool to develop interpersonal skills requiring fewer human and economic resources [44]. Role-plays enhances the classrooms to clinical settings transition [45]. Nevertheless, its implementation needs thorough planning. In several studies mentioned earlier, most students favored the use of SP compared to RP. This is perhaps because what the students want (active learning) does not occur in unstructured and unplanned RP [46]. In order to make a successful, effective peer role-play, several things have to be prepared [25], including well-trained tutors, prior teaching of basic communication skills, sufficient time allocation for the students to prepare themselves for the roles, well-defined learning objective, realistic and well-designed scenarios based on participant medical knowledge level, pre-determined role-play duration, detailed task design and rules for each role, strict tutor supervision of each student's participation, structured assessment form for peer-observer, adequate time for after-session group discussion [12], [14], [21], [25], [47].

Learning medicine is expensive, and there is a rising trend in medical education debt [48]. Cost-effectiveness analysis from one of the included study [22] showed a major advantage of RP (122 man-hours) compared to SP (172 man-hours) on total man-hour for coaching lecturers and SP as well as for conducting the courses. The total costs of the SP were also 53.6% higher. Previous study [49] also showed that incorporating SP in medical education was more costly with positive the incremental cost-effectiveness ratio (ICER=\$100.93 higher per student) compared to RP. An ICER is calculated by dividing the difference in costs between two methods by the difference in outcomes. Therefore, the use of SP has to be critically re-evaluated because it is directly related to education tuition and fees [49]. Peer role-play is a simpler method offering the enhancement of communication skills just as good as SP. Given the longer time and bigger resources SP requires, PRP may be a good alternative at any university regardless of economic resources.

This systematic review has several limitations. The number of eligible studies, especially studies with comparison and control groups, were scarce. The control group was not feasible to make in several studies because the course was obligatory for all of the students included. This ultimately increases the risk of bias at the outcome level as it can be influenced by confounding factors. Moreover, there is high variability in the PRP programs (number of roles, cases' topic, group size, number of sessions, duration of sessions) across studies. Furthermore, there is a lack of validity of the questionnaires and OSCE checklists used in most studies included. The causal inference between PRP CST and increased communication skill is therefore cannot be made as only one RCT was available. The sample size was rather small, so the findings may not be representative of all medical students.

In spite of a painstaking search process, only three databases were searched. The authors also do not have full access to the databases. Hence, some studies that would have met eligibility criteria might have been missed. All of the studies included in this systematic review were published in peer-reviewed journals. Although screening of reference lists of relevant studies was done, there were no grey literatures included in this review. This could increase the risk of publication bias. For future studies, we recommend randomized controlled trials with larger sample sizes, objective measurements of communication skills with validated OSCE checklists with standardized or real patient encounters, structured feedback process, and follow-up interview. The use of open-ended questions and focused group discussions might also result in more in-depth qualitative analysis. Advanced study to evaluate the long-term impact (sustainability of changes) of RP on communication skills and major health outcomes should also be conducted.

4. CONCLUSION

This systematic review provides the use of peer role-play method can improve doctor-patient communication skill based on medical student's perception and OSCE scores. Peer role-play is a cost-effective method for communication skills training with comparable results with the expensive use of simulated patients. However, in order to conduct an effective peer role-play session, several things have to be prepared before, during, and after the session. Further study is needed to support this statement.




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