

## ORIGINAL RESEARCH ARTICLE

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### Teaching learning methods effective in improving communication skills among medical students: A systematic review

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#### ABSTRACT

**Background:** Competency Based Medical Education curriculum has incorporated multiple changes from traditional curriculum one among which is teaching communication skills. This review focused on systematic analysis of research articles to identify various teaching learning methods found to be effective in improving communication skills among medical students. **Methods:** Articles on communication skills, written in English, published between the years 2000 to 2020 in Medline database were retrieved. All full text articles with intervention study design were included. A total of 1061 articles were retrieved using different search strategies. After removing duplications, title and abstract screening was done that was followed by full text review for quality assessment using Cochrane Effective Practice and Organisation of Care Review Group (EPOC) checklist. **Results:** Out of total 1061 articles retrieved, 22 were found to be focusing on communication skills training and assessment. Quality assessment were done using EPOC checklist which resulted in 18 articles for full text review. Among these 18 studies, 7 used role-plays performed either by peers/near peers or student themselves coupled with/without feedback by teachers, peers and reflection writing. Student-patient/standardized patient interaction with feedback by faculty/peers/standardized patients, recorded videoclips of roleplay/student-patient interaction, virtual simulation, structured scripts, workshop, and seminar were few other TL methods used. **Conclusion:** Role-play was the teaching learning method commonly used. Studies varied in TL methods, context of implementation, duration of intervention & follow up and assessment method. Since none of the articles reviewed were conducted in India, further studies with rigorous study design are needed to explore TL methods that would be effective in Indian context.

**Key word:** communication skills, interpersonal communication, medical education, medical school, medical students, teaching learning methods.

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#### INTRODUCTION

CBME curriculum implemented in 2019 is a major shift from traditional curriculum incorporating multiple changes from traditional curriculum.<sup>1,2</sup> One among which is AETCOM module to teach attitude, ethics and communication skills to medical students

in India.<sup>3</sup> Effective communication skills are necessary to interact with patients and their family members to aid in correct diagnosis of health issue and to communicate effectively to them about the disease course, treatment and prevention measures

and also to communicate with their colleagues and health care workers for effective team work. Better communication ability is needed to improve health awareness among patients and in the community. Higher the communication, higher would be the adherence to medication among the patients and better would be the health outcomes.<sup>4,5,6,7,8</sup> Better doctor patient communication would reduce miscommunication related errors.<sup>4</sup> As per the present CBME curriculum, communication skills are taught across all phases of MBBS curriculum from first to final year. Teaching communication to IMG is also included as a part of foundation course for first year MBBS even before they enter regular teaching. Though the AETCOM module includes various teaching learning (TL) methods suggested to teach communication, it also gives opportunity for faculty to use their own innovative methods in teaching the specified competencies relevant to communication skills. Under traditional curriculum, learning communication skills was a part of hidden curriculum and hence there was no uniform systematic approach in teaching the same. As per the new CBME curriculum for undergraduate medical students, communication skills are to be taught to the IMG using appropriate TL methods and the same must be assessed in each phase to ensure that the student has acquired the competencies. Hence it is essential to identify effective TL methods to improve communication skills which may then be implemented in the teaching learning process. The present study is a systematic review focusing on summarizing the findings of relevant intervention studies to explore teaching learning (TL) methods to improve communication skills among medical students.

## METHODOLOGY

A systematic review of articles focusing on improving communication skills among medical students was done in the month of October 2020.

Data source and Eligibility criteria: Articles written in English, published between the years January 2000 to September 2020 available in Medline database using PubMed search engine were included. All articles fulfilling the eligibility criteria were included irrespective of country where the original research work is done. Articles published from research work done using intervention study design and only original research articles were included excluding review articles. Intervention studies that used both randomized and non-randomized control study

designs were included for review. Only free full text articles published during the specified period were retrieved to complete the review process.

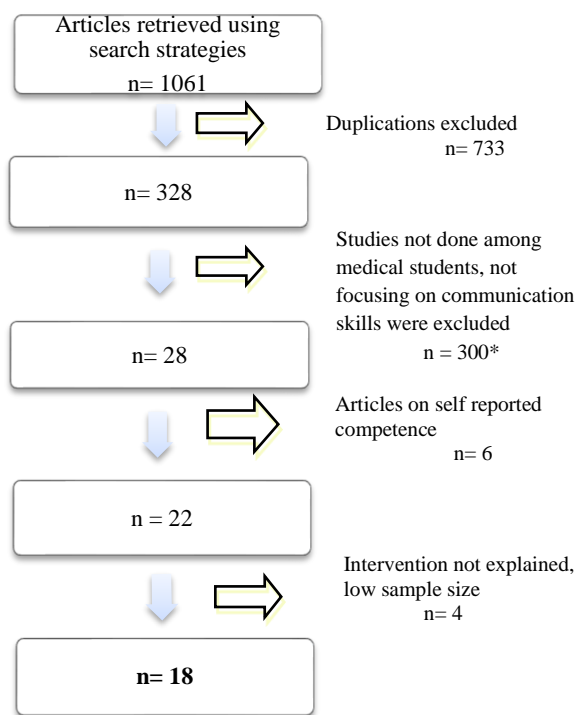
Search strategy: The search terms used were “communication”, “communication skills”, “medical students”, “medical undergraduates”, “medical education”, “medical school”, “interpersonal communication” and “interpersonal communication skills”. Box 1 describes the details of search strategy. These search strategies resulted in 1061 free full text articles.

### Box 1: Search strategies used to retrieve the articles

Medical students AND communication: 127  
Medical students AND communication skill: 59  
Medical undergraduates AND communication skills: 29  
Medical undergraduates AND communication: 43  
Medical education AND communication skills: 198  
Medical school AND communication skills: 163  
Medical students AND interpersonal communication: 119  
Medical students AND interpersonal communication skills: 58  
Medical undergraduates AND interpersonal communication: 43

Review process: Article’s search and retrieval was done by two authors independently. Wherever a discrepancy was found in the selected article, it was resolved by another reviewer not related to this study and the Cronbach’s alpha for inter reviewer agreement was 0.87. In phase 1, title of the articles was screened to remove duplications which resulted in 328 articles. During phase 2 of review process, title and abstract of these articles were read to identify studies specifically done using intervention study design among medical students focusing on communication skills. Research works not done among medical students i.e., physicians, residents, specialists, nursing/dental/physiotherapy, and other allied health science students were excluded. The studies done to improve communication skill among caregivers and patients were also excluded. This resulted in 28 studies which were included for complete systematic review to explore the TL methods used in these studies and to identify effective methods in phase 3 review. Among these 28 articles, 6 studies did not assess communication skills, instead self-rated competence was studied and hence these were excluded resulting in 22 articles. In the next phase, Quality assessment of these articles was done using the Cochrane Effective Practice and Organisation of Care Review Group (EPOC) checklist and bias assessment.<sup>9,10</sup> Description of sample size, randomization process, allocation

**Figure 1: Flowchart explaining the process of article retrieval for systematic review**



- \* n= 87 (physicians/residents/specialists/primary care providers)
- n= 88 (community/family/care giver skill/patient care)
- n= 63 (Allied health/college/school students not medical students)
- n= 28 (clinical skills not communication)
- n= 17 (information management/ telehealth not communication skills)
- n= 5 (Trial protocol)
- n= 5 (Academic performance of students/language fluency not communication skills)
- n =2 (communication knowledge not skill)
- n= 2 (questionnaire development)
- n= 3 (effective communication for strategy for trial participant recruitment)

concealment, blinding of assessors/standardized patients/real patients, teaching learning methods used for intervention, pre and post intervention assessment method and proportion of loss to follow-up, precautions taken by the authors to reduce bias. The studies without clear explanation of randomization process and intervention, studies that reported inadequate sample size and loss to follow-up more than 20% were excluded<sup>11-14</sup> resulting in 18 articles. Figure 1 describes the complete review process.

## RESULTS

A total of 18 articles were completely reviewed for the details of teaching learning methods used in these studies. Table 1 describes details of the studies included for complete review. Of these 18 studies, 2 were controlled clinical trials and rest 16 studies were randomized controlled trials. Majority of these studies were done in Germany (27.7%) followed by

USA (16.7%), Japan, Taiwan and other countries. Communication skills are not only important for an Indian Medical Graduate to interact with their patients and caregivers, but also to achieve team coordination with their colleagues and other health care professionals. Thus, we included studies that focused on doctor-patient communication and team leader communication. Of the total 18 studied reviewed, 16 were focused on improving doctor-patient communication and 2 on improving communication skills as a team leader. All these studies were done with medical students across various professional years as participants. Majority of studies were done among 5<sup>th</sup> year medical students (33.3%), followed by 4<sup>th</sup> year (22.2%) and 2<sup>nd</sup> year students (22.2%). Other participants included were students of 1<sup>st</sup>, 3<sup>rd</sup> and 6<sup>th</sup> professional year. Amongst various teaching learning methods used in these studies, roleplay by the students coupled with or without feedback was most used followed by student-real patient or simulated patient interaction. Computer based virtual simulation and simulation of nonverbal behaviour of the students and feedback for the same were also used to teach communication skills for medical students. Details of teaching learning methods used, and their effectiveness are explained in table 2. Among 18 articles reviewed, only 4 studies have compared two different TL methods. Out of these 18 studies, only two studies reported long term effectiveness of the interventions used and of which one study with videoclips and roleplay reported that few components of communication skills were retained and scores of few decreased. One study also assessed cost effectiveness of the TL method used as intervention. Of these, one study reported that roleplay by students is cost effective than using student-standardized patient interaction.

## DISCUSSION

Graduate Medical Education regulation 2019 has introduced outcome-based teaching for medical students to produce competent Indian Medical Graduate. Acquiring appropriate communication skills is one such competency for an IMG. Appropriate teaching learning methods need to be used to make an IMG competent in communication skills. The present systematic review was done to provide insights into the availability of quality intervention studies and specific teaching learning methods found effective. Intervention studies that assessed improvement in communication

**Table 1: details of the studies included for complete review of teaching learning methods**

Year	Country	Author	Design	TL Methods	Sample size	Assessment method	Result
2001	London	Knowles C et al <sup>15</sup>	RCT	Video of a roleplay with structured feedback by physician and educational psychologist	N= 132 4 <sup>th</sup> year	OSCE	Sample group scored significantly high than control group
2003	USA	Windish DM et al <sup>16</sup>	RCT	Small group exercises with roleplay, reflection and feedback	N= 60 2 <sup>nd</sup> year	30-item interpersonal checklist rating behaviors by standardized patients	Significant difference in building rapport and gathering psychosocial history.
2004	Japan	Mukohara K et al <sup>17</sup>	CCT	Small group Seminar	N= 105 5 <sup>th</sup> year	Videotaped OSCE	No significant difference in majority of core skills
2008	Taiwan	Ho MJ et al <sup>18</sup>	RCT	Videoclip and roleplay	N= 57 5 <sup>th</sup> year	OSCE	Roleplay is effective than videoclips. Both roleplay and videoclips were effective than controls
2009	Texas	Morrow JB et al <sup>19</sup>	RCT	Guided discovery, brief didactics, and practice role plays.	N= 17 1 <sup>st</sup> year	EHR specific communication skills checklist	EHR specific communication skills does not improve general communication skills
2009	Turkey	Ozcarak N et al <sup>20</sup>	RCT	Verbal feedback by faculty on spot and Visual feedback by watching recorded videos of interaction with simulated patient	N= 52 2 <sup>nd</sup> year	Communication skills checklist	Feedback based on videotaped interviews is superior to feedback given based on the observation of assessors.
2010	Taiwan	Ho MJ et al <sup>21</sup>	RCT	Videoclip and roleplay	N= 57 5 <sup>th</sup> year	OSCE	Communication skills in few areas diminished significantly after a year and no significant reduction in few components
2012	Germany	Lund F <sup>22</sup>	RCT	Peer roleplay with feedback by teachers.	N= 84 1 <sup>st</sup> year	Communication Assessment Tool using videotaped student patient interaction	Communication score was significantly high in intervention group
2013	Germany	Werner A et al <sup>23</sup>	RCT with cross over	Lecture, role-play, brainstorming session	N= 30 5 <sup>th</sup> , 6 <sup>th</sup> year	Information recall by layperson	Significantly more information items could be recalled in intervention group
2015	Germany	Bosse HM <sup>24</sup>	RCT	Role Play by peer group and individually training with Standardized Patients including feedback by SP	N= 69 5 <sup>th</sup> year	Calgary-Cambridge-Observation-Guide Checklist in OSCE station	Roleplay was effective than SP encounter and feedback. Roleplay was cost-effective
2015	USA	Shaddeau A et al <sup>25</sup>	RCT	Student patient interaction as small group discussion	N= 135 3 <sup>rd</sup> year	OSCE	No significant difference in communication score
2015	Germany	Castelao EF et al <sup>26</sup>	RCT	Team leader training: Video clips followed by reflection and group discussion.	N= 180 5 <sup>th</sup> year	Validated checklist of videotaped simulation exercise	Significantly high team leader communication score in intervention group
2016	Switzerland	Perrig M et al <sup>27</sup>	Controlled intervention	Student patient interaction with real patients with systematic feedback by teacher, peers and patients	N= 48 4 <sup>th</sup> year	OSCE	There was a significant improvement in communication skills in

			tion study				intervention group but it did not had long term effect
2016	Australia	Liu C et al <sup>28</sup>	RCT with crossover trial	Automated visual presentation of students' nonverbal behavior with feedback from standardized patient (SP)	N= 268 2 <sup>nd</sup> year	SOCA checklist	Significantly high score in intervention group
2017	Japan	Nomura O et al <sup>29</sup>	RCT non-inferiority trial	Cross year peer tutoring (CYPT)	N= 116 4 <sup>th</sup> year	OSCE	No significant difference in OSCE scores between groups.
2017	USA	Kron FW et al <sup>30</sup>	RCT	Computer simulation featuring virtual humans and feedback	N= 421 2 <sup>nd</sup> year	OSCE	Significantly high score in intervention group
2018	Indiana	Pettit KE <sup>31</sup>	RCT	Refresher training in scripted communication	N= 474 4 <sup>th</sup> year	Patient rated satisfaction in student patient interaction	No statistically significant difference in communication element use between the intervention and control groups.
2019	Germany	Engerer C et al <sup>32</sup>	RCT	Specific, structured and behavior-orientated feedback	N= 66 3 <sup>rd</sup> year	Validated checklist Com-ON-check	Five out of seven domains in communication skills improved significantly pre and post in the intervention group.

**Table 2: Teaching learning methods used and reported to be effective in various studies**

TL method	No. of TL methods used	No. of TL methods with Significant effect
	n (%)	n (%)
Pre-recorder video roleplay with feedback	2	2
Real time Role play with feedback/reflection	2	2
Small group seminar	1	0
Real time Role play vs Videoclip	1	1
Videoclip vs Control	1	1
Guided discovery	1	0
Video recorded SP interaction and feedback vs on spot feedback on SP interaction	1	1
Role play vs control	1	1
Lecture/seminar/roleplay	1	1
Realtime roleplay vs SP interaction with feedback by patient	1	1
SP interaction as small group	1	0
Real time Student-Pt/SP interaction with 360 feedback	1	1
Virtual simulation	2	2
Cross Year Peer Tutoring vs Faculty Led Training	1	NA*
Structured script with instructions	1	0
Behaviour oriented feedback	1	1
<b>Total</b>	<b>19**</b>	

\* Non inferiority trial

\*\*More than one TL

method used in One study skills of medical students rather than their self-efficacy on communication were

included in this review. There were a total of 28 intervention studies retrieved initially, of which 6 studies assessed improvement in self-competence in communication skills instead of skills assessment in a patient care setting. An Indian Medical Graduate will not be confident on their communication skills unless they learn skills through scenarios in clinical setting. Hence, we included studies those assessed improvement in the medical students' communication skills during post intervention assessment compared to their baseline scores rather than assessing communication skills related knowledge and attitude.<sup>11-32</sup> Most of these studies are done in Germany<sup>22-24,26,32</sup> and none were conducted in India. To account for ethnic and other inter country differences that might influence the need and context in which appropriate communication skills are to be used, intervention studies must be conducted among medical students in India. Two among the reviewed studies reported communication skill improvement in few domains and no significant increase in few others.<sup>16,32</sup> Hence, it is difficult to interpret the overall usefulness of the TL method used in these studies. Most of the studies compared intervention using a specific TL method with conventional curriculum as control which may not provide the actual effectiveness of the TL method used unless it is compared with another TL method. Few studies have used multiple TL methods in one single intervention arm for the study purpose or in the form of curriculum implementation which makes it difficult to interpret the effect of single TL method.

## Conclusion:

Role-play was the teaching learning method commonly used and found to be effective. The studies varied in TL methods used as intervention, context in which it is implemented, duration of intervention, follow up and method of assessment before and after intervention. Since none of the articles reviewed were conducted in India, further research studies with rigorous study design are needed to explore TL methods that would be beneficial for medical students in Indian context.

## Scope for future research:

Intervention studies following appropriate quality guidelines among Indian medical students are need of the hour.

To assess the effectiveness of each TL method, single TL method need to be used in each intervention group rather than using multiple methods.

Researchers planning to identify the effect of a specific teaching learning method shall compare with another TL method rather than with a control group without any intervention.

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