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Original Research Article

## A study to evaluate the effectiveness of role-play as a teaching-learning method for communication skills among second-year students

Anuradha M. Gandhi\*, Prakruti P. Patel, Chetna K. Desai

Department of Pharmacology, B. J. Medical College, Ahmedabad, Gujarat, India

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**\*Correspondence:**

Dr. Anuradha M. Gandhi,

Email: [dr\\_anuradha1@yahoo.co.in](mailto:dr_anuradha1@yahoo.co.in)

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### ABSTRACT

**Background:** Selection of teaching learning (TL) Methods are important to improve student's interest in learning. The study was conducted to evaluate effects of demonstration and role play for method of administration and communication for use of metered dose inhaler (MDI).

**Methods:** Pretest, brief lecture (questionnaire about TL methods (Demonstration (Group A) and role play (Group B) for use and communication of MDI by trained faculties), evaluation of student's demonstration (WHO recommended steps for MDI administration and Calvary-Cambridge guide for communication) followed by post test and feedback (students and faculties). Data were analyzed at the end of study using Chi square test and Likert scale.

**Results:** Demonstration preferred by group A (Demonstration) (53.6%) and group B (Role play) (56.3%) (Pre-test) and role play (98.2%, 62.1) for dosage formulation (Post-test). WHO steps for MDI use demonstrated by >50% students of both groups. Communication skills were significantly higher in role play {nonverbal ( $p < 0.05$ -greet the patient, offering seat;  $p < 0.001$ -nodding head, eye to eye contact), verbal communication ( $p < 0.001$ ) and active listening ( $p < 0.001$ )}. Students either strongly agree or agree for demonstration (53% and 21.05%, respectively) and role play (48.54% and 31.03%, respectively) as useful for understanding and role play useful to develop communication skills (33% and 23.3%, respectively). Faculty feedback indicates both methods are useful for understanding and develop doctor patient relationship; role play to remember (56.43%) and develop communication skills (43%).

**Conclusions:** Both TL methods useful to develop cognitive skills and role play for communication skills.

**Keywords:** Communication skills, Demonstration, Method of use of MDI, Role play

### INTRODUCTION

Effective teaching-learning (TL) methods are crucial in medical education for training of undergraduate medical students to enhance the quality of education and to ensure that the learners become competent to fulfill the roles of Indian Medical Graduates (IMG).

At the end of their undergraduate training and active TL methods can improve understanding of the learners and develop their critical thinking.<sup>1,2</sup>

Thus, selection of appropriate TL methods are helpful to develop cognitive, psychomotor and affective domain including communication skills and improve student's interest in learning and useful to the learner to become a competent IMG.

The attitude, ethics, and communication (AETCOM) module is a competency-based curriculum developed by the National Medical Commission (NMC) for undergraduate medical education in India. It aims to foster crucial skills and attributes in future doctors, focusing on patient care, ethical decision-making, and effective communication. One of the competencies suggested for

Pharmacology subject during second Professional year of undergraduate medical students training is-learner should be able to counsel patients regarding correct methods of drug administration using special devices.<sup>3</sup>

A MDI is a delivery system for inhalational administration of a drug and correct inhalation technique and patient counseling for use of inhaler is important for better therapeutic outcome in bronchial asthma.<sup>4</sup> It has been reported that incorrect use of MDI is common and poor understanding about use of MDI is associated with non-compliance and treatment failure in patients of bronchial asthma. This may be because of inadequate or incomplete information provided to the patient(s) at first visit or during follow-up visit by prescriber and for successful outcome.<sup>5-6,8</sup> Although, How to provide treatment related information is taught during undergraduate training but it has been reported that communication skills reduces over a period of time among medical students during their education training and lose their focus on holistic approach in patient care.<sup>9</sup>

Communication skills were not taught directly until the national medical commission's competency-based medical education (CBME) curriculum (2019) highlighted its importance. AETCOM module has specified the competencies for attitude, communication and ethics needed to be taught in each year of the medical course.<sup>10</sup> which can be learned and acquired during undergraduate medical training to become competent IMG.<sup>11-13</sup> Demonstration is traditional teaching method used in Pharmacology where the educator explains theory and demonstrates a procedure in simulation. This procedure is used for practical classes in second year undergraduate medical training. Demonstration method can increase cognitive skills of the students but not much useful for developing communication skills.<sup>14</sup>

Role-play is an effective TL method for learning communication skills, to acquire knowledge and attitudes and also an useful method for learners of different ages.<sup>15</sup> Hence, role play is the preferred instructional method to develop attitude, behavior and the aforementioned skills.<sup>16</sup> Although role-play is regularly used to develop communication skills in medical students in different countries, few reports have evaluated role-play as a formal educational tool.<sup>17</sup>

This intervention study was conducted to evaluate the effects of two educational methods i.e. Demonstration and Role Play for development of competency about method of administration and communication for the use of MDI among second year undergraduate medical students.

## **METHODS**

### ***Study type***

Study type was a prospective and interventional study.

### ***Stud site***

Study carried out at Department of Pharmacology, B. J. Medical College, Ahmedabad, Gujarat, India.

### ***Study duration***

Study carried out for 6 months (September 2017 to March 2018).

### ***Participants***

Participants included were 2<sup>nd</sup> MBBS students.

### ***Study tool***

A checklist prepared on the basis of WHO recommended steps for MDI administration was used to check the method of MDI administration.<sup>18,19</sup> Checklist based on guideline Calgary-Cambridge for medical interview was used to check communication skill of the student for the communication about technique of use of MDI administration.<sup>20</sup>

Likert scale used for feedback of students for assessment of effectiveness of methodology. Feedback from faculties is collected for effectiveness of the TL method.

### ***Study procedure***

After obtaining permission from institutional ethics committee and head of department of pharmacology, second professional year medical students were included in the study after taking written informed consent.

The faculties were briefed and trained about the study and method to conduct the teaching practical session based on WHO recommended steps and Calgary-Cambridge guide checklist for administration of method of use of MDI.

The students were divided into two groups: Group A (Demonstration) and group B (Role play).

### ***Pre intervention period***

A brief lecture on pharmacotherapy of bronchial asthma and method of use of MDI in bronchial asthma was taken by the investigator before administration of validated pre-test questionnaire. Followed by administration of validated pre-test questionnaire to the students. The questions were about the effective TL method and how to use MDI for treatment of bronchial asthma

### ***Interventional period***

The students were divided into demonstration group (Group A) and role play (Group B) based on their role numbers. Trained faculties taught by either demonstration (Group A) or role play (Group B) about method of use of MDI and how to communicate with patient about its use.

### Post intervention period

After 1 week duration, students were asked individually to demonstrate (considering faculty as patient) the method of administration of MDI. Trained faculties assessed the students' performance as per checklist prepared on the basis of WHO recommended steps of MDI administration and Calbary-Cambridge guide for assessment of communication skill. A post-test questionnaire (same as pre-test) was then administered to students.

Structured feedback from the students on the teaching methods and from the faculty regarding the usefulness of the teaching methods were collected.

At the end of study, both the groups were explained and demonstrated the method of use of MDI by role play (Group A) and demonstration (Group B) TL method.

### Statistical analysis

At the end, data was expressed as percentage and data was analyzed using 'z' test and Chi-square test.  $P < 0.05$  was considered as statistically significant. Following parameters were analyzed using Graph Pad version 5.

## RESULTS

This prospective, interventional study was carried out in second professional year undergraduate medical students during pharmacology practical training to study effectiveness of role play as a TL method to teach skills and communication in undergraduate medical students.

In our study, in pre-test evaluation in both the groups students preferred TL method for training of dosage formulation in practical classes was demonstration (53.6% and 56.3%) and video (58.8% and 50.5%) as a teaching aid in group A and B, respectively. Analysis of post-test reveal that role play was preferred as TL method (98.3% and 62.1%) and video (62.3% and 49.5%) was preferred as teaching aid for teaching practical class for dosage formulation by both the groups (Table 1).

Pre and post-test knowledge was analyzed for use MDI for inhalation administration of drugs, drugs used via inhalational route, disadvantages of use of MDI, sequence of steps of MDI use and essential steps of use of MDI. Knowledge of students was significantly ( $p < 0.05$ ) low about disadvantages of use of MDI in demonstration group

and was significant ( $p < 0.05$ ) higher in knowledge of essential steps of administration of MDI as per WHO criteria in posttest analysis in demonstration method (Table 2).

After one week, when the students were assessed by trained faculties about the skills of presentation of use of MDI administration, appropriate presentation of all steps for use of MDI were demonstrated by more than 50% students of both the groups except 34% students of role play group were able to show the skill of step 10 (Rinse the mouth with warm water). Students of Demonstration group showed significantly higher ( $p < 0.05$ ) in presenting skill for step 7 and step 10 as compared to role play group. There was no significant difference in presenting essential steps (2, 4, 6, 8 and 9) for MDI administration between both the groups.

The communication skills were assessed as nonverbal, verbal and active listening communication as per the checklist. It was observed that nonverbal, verbal and active listening were significantly higher in role play group as compared to demonstration group which include nonverbal ( $p < 0.05$ -greet the patient, offering seat and  $p < 0.001$ -nodding head, eye to eye contact), verbal communication ( $p < 0.001$ -listening patient's questions, explanation about patient question) and active listening ( $p < 0.001$ ) (Table 3).

The students' feedback was assessed regarding the impact of the TL method on clarifying doubts, enhancing understanding, and overall satisfaction with learning the MDI administration technique. Whether the TL method contributes to the development of communication and interpersonal skills, enhancing interest and motivation for further learning were also evaluated. Majority students either strongly agree or agree that demonstration (53% and 21.05%, respectively) and role play (48.54% and 31.03%, respectively) methods are useful for understanding the method of administration of MDI while role play additionally useful to develop of communication skill (33% and 23.3%, respectively) (Table 4).

Feedback of faculties indicating role play and demonstration methods are useful for understanding (39% and 43.47% respectively) while role play helps to remember (56.43%) and to develop communication skill (43%). Both TL methods are helpful to develop doctor patient relationship as per feedback of faculties (demonstration 21.73% and role play 21%).

**Table 1: Students' preference for TL method.**

Student's preference	Group A (Demonstration), (n=114)		Group B, (Role play), (n=103)	
	Pre test (%)	Post test (%)	Pre test (%)	Post test (%)
Teaching method for dosage formulation	Demo (53.6)	Role play (98.2)	Demo (56.3)	Role play (62.1)
Teaching aid for dosage formulation	Video (58.8)	Video (62.3)	Video (50.5)	Video (49.5)
Teaching method for MDI	Demo (54.4)	Demo (69.3)	Demo (61.2)	Role play (66.99)

**Table 2: Students' pre and post-test knowledge of administration of MDI.**

Knowledge about MDI	Demonstration, (n=114) (%)			Role play, (n=103) (%)		
	Pre test	Post test	% increase/decrease	Pre test	Post test	% increase/decrease
Inhalation-MDI administration	94.7	87.7	-7.0	77.6	85.4	7.8
Drugs administered via MDI	91.2	92.3	1.1	62.1	65.0	2.9
Disadvantages of MDI	100	88*	-12	87.4	86.4	-1.0
Sequence of steps of MDI	98.2	97.4	-0.9	92.2	93.2	1.0
Essential steps-use of MDI	30	65*	35	21.4	30.1	8.7

Data was analyzed using 'Z' test ; \*p<0.05 as compared to pre test

**Table 3: Students' assessment for communication skill by faculties.**

	Non verbal communication (%)			Verbal communication (%)		Active listening (%)	
	Demo	Role play		Demo	Role play	Demo	Role play
<b>Greet the patient</b>	33	55*	Patient complaint(s)	50	77**	33	64**
<b>Offering seat</b>	23	42*	Questioning about c/o (length and severity)	42	59	--	--
<b>Touching the patient</b>	07	12	Explain for diagnosis, treatment available	33	41	--	--
<b>Nodding Head</b>	21	42**	Explanation to patient's question	18	36**	--	--
<b>Eye to eye contact</b>	38	63**	Explanation for treatment	29	33	--	--

Data was analyzed using Chi square test between groups, \*p<0.05 as compared to demonstration group, \*\*p<0.001 as compared to demonstration group.

**Table 4: Student feedback for TL method for MDI administration, (n=217).**

Questions	Strongly agree (%)		Agree (%)		Neither agree/nor disagree (%)		Disagree (%)		Strongly disagree (%)	
	Demo	Role play	Demo	Role play	Demo	Role play	Demo	Role play	Demo	Role play
<b>Clarify doubts</b>	25.43	23.3	64.91	66.99	8.77	1.94	0.87	2.91	0	0
<b>Understanding of subject</b>	39.47	43.68	58.77	45.63	1.75	4.85	0	0	0	0
<b>Satisfaction with method</b>	28.07	34.95	62.28	54.36	7.89	3.88	0.87	1.94	0	0
<b>Developing communication and interpersonal relation</b>	18.42	30.09	44.73	48.54	28.07	13.59	5.26	0.97	0	0
<b>Increase interest and motivated for the learning</b>	20.17	33.98	57.89	43.68	17.54	15.53	2.63	0	1.75	0.97

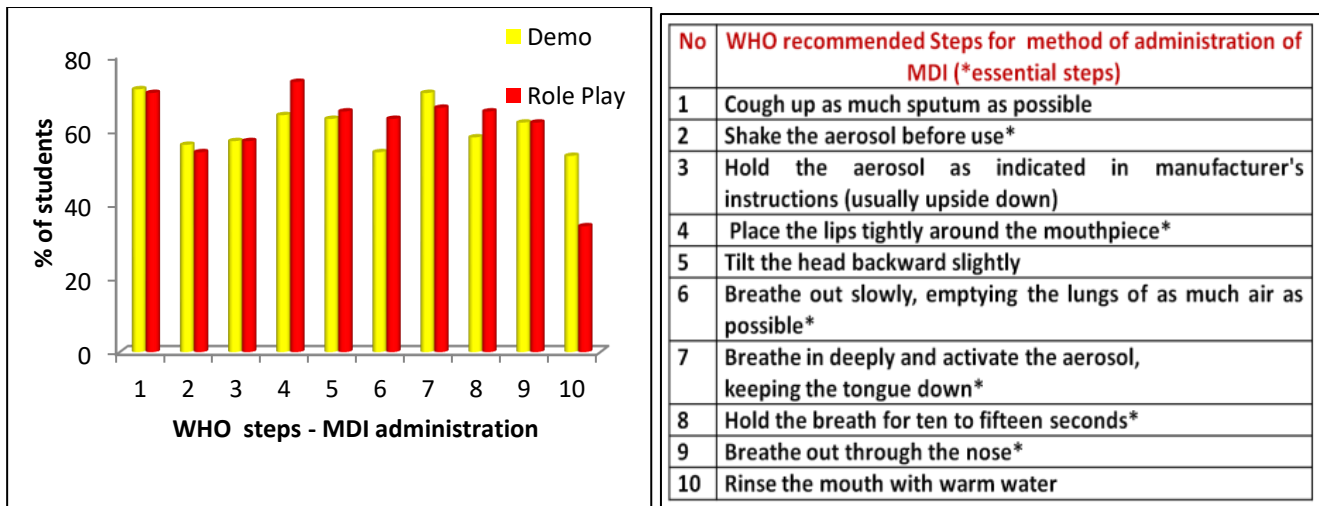


Figure 1: Student's assessment for MDI administration by faculties (n=217).

**DISCUSSION**

Medical undergraduate training and evaluation should emphasize both fundamental clinical skills and professional attitude, essential soft skills such as communication, ethical practice, professionalism and doctor-patient relationships. The NMC has suggested different competencies for pharmacology training for 2<sup>nd</sup> professional year MBBS students; one of the competencies suggested is “Student should be able to counsel the patients regarding correct methods of drug administration using special devices.”<sup>3</sup>

The demonstration method used in pharmacology aids in developing cognitive skills related to dosage formulation. However, it does not help the trainee to trained in communication skills necessary to enhance patient understanding of dosage formulation and its proper use.<sup>21</sup>

MDI is the special device use to administered drugs via inhalation route for the treatment of bronchial asthma.<sup>22</sup> Many patients are not able to use MDI correctly and hence, there is less dose delivered to the site of action i.e. airways.<sup>23</sup> If information given by the doctor or health care professional are inadequate then the issue of therapeutic failure may arise.<sup>24</sup> It has been reported that inadequate communication training for medical students may result in graduates who possess strong cognitive abilities but lack effective communication skills.<sup>25</sup>

The present study was carried out in second year undergraduate medical students during pharmacology training to evaluate the effect of demonstration and role play as TL method to evaluate the effects of demonstration and role play to teach the method of administration and communication of the use of MDI in undergraduate medical students. Role play was selected as a teaching method as role play can increase knowledge of the subject, improve psychomotor and communication skills and

hence, considered as a feasible method of andragogy and develop critical thinking about the subject.<sup>26</sup>

Pre and post-test analysis and comparison showed that majority students preferred role play for teaching of dosage formulation and video as a teaching aid for practical classes of pharmacology training. Role play group preferred role play and demonstration group preferred demonstration method as a TL method for teaching dosage formulation and method of MDI administration during pharmacology training at post-test analysis as compared to pre-test analysis.

Students’ preferred role play as an teaching method as it is an active TL method and if appropriately planned and implemented can make learning process enjoyment and increase interest with gaining knowledge by the students.<sup>27</sup> Audiovisual teaching aid can help to understand and retain knowledge as well as useful in demonstrating procedure and communication skills which could be the reason for preferring video as teaching aid.<sup>28</sup> In our study, probable reason for students in demonstration group for preferring demonstration method is that they did not experience the role play method for learning about method of MDI administration.

There was no significant difference observed in pre and post-test analysis of knowledge in role play method while in demonstration method, significant (p<0.05) reduction observed in knowledge of disadvantages of use of MDI and significant increase (p<0.05) in knowledge of essential steps of administration of MDI as per WHO criteria (Table 2). This suggest that our results are similar to others studies reporting that both the methods can helpful to gain the knowledge.<sup>27,29</sup>

After one week of intervention, appropriate presentation of all steps for use of MDI were demonstrated by more than 50% students of both the groups except 34% students of role play group were able to show the skill of step 10 (Rinse the mouth with warm water). Students of

demonstration group showed significantly higher ( $p < 0.05$ ) in presenting skill for step 7 and step 10 as compared to role play group. There was no significant difference in presenting essential steps (2, 4, 6, 8 and 9) for MDI administration between both the groups.

Thus, students were able to understand the method of MDI administration as per WHO recommended steps and present more effectively non-essential steps suggesting Demonstration method during pharmacology training of undergraduate medical students can help them to gain knowledge.<sup>21</sup> However, there was no significant difference between both the groups for presenting essential steps of MDI administration suggesting both methods are helpful to gain the knowledge particularly for essential steps of MDI administration which are important for treatment outcome in bronchial asthma.

After post-test, students were asked to provide response to structured and validated feedback form. Students either strongly agree or agree that demonstration (53% and 21.05%, respectively) and role play (48.54% and 31.03%, respectively) methods are useful for understanding the method of administration of MDI while role play additionally useful to develop of communication skill (33% and 23.3%, respectively).

In our study, feedback of students and faculties were also evaluated for the usefulness of TL methods and feedback from faculty about development of communication skill among the students after intervention in both the groups. Structured feedback was included in the study as it can increase thought process and hence, able to analyze the experience about the topic discuss/taught during teaching session. In addition, It is also help to understand the value of learning session/teaching method before and after participating in the session-an important component of adult learning. This help the students to understand the concept of the subject and they are able to relate their own and others' experiences. Thus, appropriate TL methods develop the attitude of becoming a life long learner.<sup>16</sup>

In our study, feedback of the students suggests both the methods are helpful to gain the knowledge and role play method is associated with increased interest, better understanding and in addition, helps to develop communication skill.<sup>27,29</sup>

Faculties observed and assessed communication skill during students' presentation (Table 3) which shows that there was significant increase in communication in role play group as compared to demonstration group; nonverbal communication ( $p < 0.05$ -greet the patient, offering seat and  $p < 0.001$ -nodding head, eye to eye contact), verbal communication ( $p < 0.001$ -listening patient's questions, explanation about patient question) and in active listening ( $p < 0.001$ ). Faculty feedback indicate both role play and demonstration methods are useful for understanding (39% and 43.47% respectively) while role play method helps to remember (56.43%) and

to develop communication skills (43%). Demonstration can provide interaction while role play requires planning and trained faculties.

Demonstration increases knowledge while role play method helps to increase knowledge, awareness, interest and self-motivation and also helps to develop communication skill. In addition, role play, a method of simulation and acknowledges the importance of the social context of learning.<sup>16,26</sup>

Communications skills are essential for medical training and patient care i.e. taking history, probing for associated and additional problems, counseling the patient, explaining treatment options available, its complications and advising treatment schedule. Communication, an essential soft skills can be learned during the formative years which in future, practice of good communication skills in the medical profession is important for the development of meaningful and trustworthy relationship between the doctors and patients and to increase therapeutic outcome.<sup>16</sup> Thus, importance of this soft skill development during undergraduate medical training is of vital importance for the future development of doctor patient relationship and to increase faith of the patients in health care professional.<sup>30</sup>

Role play is an interesting mode of transfer of information which can generate interest and allows observers/students to experience the perspective of both the physician and the patient. Hence, considered as an important method of adult learning and provoked critical thinking about the subject.<sup>31,32</sup>

### **Strengths**

There is a paucity of data with respect to its usefulness in teaching medication communication skills, in particular, in the Indian medical scenario. We studied the one of the competencies which is considered as an important for competent IMG and healthy doctor patient relation.

### **Limitations**

The long-term impact of role-play sessions on behavioral changes is not investigated.

### **CONCLUSION**

Thus, our study concludes that both demonstration and role play are effective TL methods to develop cognitive skill. Role play is an important TL method for teaching specific topic during pharmacology training to gain maximal knowledge, to provide experience, to develop communication skills that will increase confidence of undergraduate medical students. Incorporation of role play method in addition to conventional teaching method i.e. demonstration during pharmacology training of undergraduate medical students will help to develop

communication skills and in future, helps for better treatment outcome.

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