

# [Effect of simulation based education on medical knowledge](https://assignbuster.com/effect-of-simulation-based-education-on-medical-knowledge/)

EFFECT OF SIMULATION BASED EDUCATION ON KNOWLEDGE OF MEDICAL STUDENTS IN CONTEXT OF COMMUNITY MEDICINE

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ABSTRACT

Simulations are being increasingly used to train medical students in diverse clinical skills. Simulation is arguably the most prominent innovation in medical education over the past 15 years. Role play is a simulation technique which can potentially strengthen knowledge that will lead to improved expertise. The present study was undertaken to assess an effectiveness of simple intervention in the form of ‘ Role Play Simulation’ on the knowledge of undergraduate MBBS medical students of one of randomly selected medical colleges in Maharashtra regarding ‘ Epidemics Investigations.’Methods: A cross-sectional study consisting of pre and post test intervention was conducted at one of the randomly selected medical colleges in Western Maharashtra. A structured pretested self administered questionnaire consisting of 15 close ended questions was distributed to all 144 participants. The present study attempted to incorporate simulation based role play which was based on epidemic/outbreak investigations for food poisoning. Immediately after this intervention, same questionnaire was distributed to participants as a post test and responses were collected. ‘ Paired t-test’ was used to assess pre and post intervention knowledge of participants. Results: Present study revealed significant improvement in knowledge of participants about epidemic investigations from pre to post intervention as a result of ‘ Role Play Simulation Based Education’ (t = 42. 87, p < 0. 001). Statistically significant difference was observed for all fifteen questions. Conclusion: A simple simulation form like role play can make significant change in knowledge of medical students about very important topic i. e. ‘ Epidemic Investigation’ in Community Medicine subject.

Key words: Simulations, Community Medicine, Knowledge, Medical students, Role play

INTRODUCTION

There have been burgeoning developments and changes in medical education. [1] The information and communication technology has revolutionized the teaching and learning process. [1] Various new teaching methodogies are being used to impart medical education to the students in more effective way. The basic reason to look for these methodologies is the dis-satisfaction with conventional mode of education, which is losing it’s relevance in this era of information explosion. [1]

Simulations are being increasingly used to train medical students in diverse clinical skills. Simulation is arguably the most prominent innovation in medical education over the past 15 years. [2] They help us to replicate situations which may not possible to get in real settings or where it may be logistically difficult to work on real patients. [1] Role play is a simulation technique which can potentially strengthen knowledge that will lead to improved expertise. Despite of an effectiveness of role play in providing medical education, it’s use in educating medical students is limited. [3]

‘ Epidemic Investigation’ is not only an essential aspect in Community Medicine subject but also it has public health relevance. Even though very few studies have been conducted so far in India to evaluate the knowledge of medical students pertaining to investigations of epidemic, some evidences have shown that ‘ Simulation Based Education’ can be an effective teaching tool to educate medical students about emergency situation like epidemics. Clinical situations for teaching and learning purposes are created using various forms of simulation like mannequins, part-task trainers, simulated patients or computer-generated simulations.

The present study was undertaken to assess an effectiveness of simple intervention in the form of ‘ Role Play Simulation’ on the knowledge of undergraduate MBBS medical students of one of randomly selected medical colleges in Maharashtra regarding ‘ Epidemics Investigations.’

OBJECTIVE

To assess an effectiveness of ‘ Role Play Simulation’ on knowledge of undergraduate MBBS medical students about ‘ Epidemics Investigations.’

MATERIAL AND METHODS

A cross-sectional study consisting of pre and post test intervention was conducted at one of the randomly selected medical colleges in Western Maharashtra. The inclusion criteria were all 144 undergraduate medical students from 7 th semester who were present on the day of an intervention. Those who did not attend the class on the day of an intervention were excluded from the study. Written permission was also obtained from participants after explaining the purpose of study to them.

A structured pretested self administered questionnaire consisting of 15 close ended questions was distributed to all participants. They were allowed 15 minutes to complete questionnaire under strict supervision. A questionnaire consisted of questions based on various aspects of epidemic investigations like essential criteria for confirmation of existence of an epidemic, spot map, epidemiological case sheet etc.

The present study attempted to incorporate simulation based role play which was based on epidemic/outbreak investigations for food poisoning. Few volunteer medical students were selected and trained to participate in simulation based role play. They were asked to focus on ten important steps in investigation of an epidemic i. e. verification of diagnosis, confirmation of an existence of an epidemic, defining the population at risk, rapid search for all cases and their characteristics, data analysis, formulation of hypothesis, testing of hypothesis, evaluation of ecological factors, further investigation of population at risk and writing the report (Table 1). Remaining students were asked to watch this simulation based role play. Total duration of role play was about 20 minutes. Immediately after this intervention, same questionnaire was distributed to participants as a post test and responses were collected.

Data Analysis

The scoring system for each complete question was assigned for pre and post intervention. Statistical analysis was done using Microsoft Office Excel Sheet. ‘ Paired t-test’ was used to assess pre and post intervention knowledge of participants.

RESULTS AND DISCUSSION

In present study, of 144 participants 78(54. 16%) were males and 66 (45. 83%) were females. All (100%) participants were in age bracket of 20-23 years.

In contemporary medical education, there is strong emphasis on the use of innovative teaching methods like Problem Based Learning, One Minute Preceptor (OMP), Computer Assisted Learning, Flipped Teaching etc. Uses of these types of methods help students to learn various clinical skills in more effective way.

The present study attempted to impart knowledge to undergraduate medical students about investigations of an epidemic by using ‘ Role Play Method’ rather than using traditional teaching method.

The present study showed that simple simulation form like role play made improvement in the knowledge of participants about ‘ Epidemic Investigations.’ Similarly other Studies also reported that the use of simulations as a teaching tool increases student’s comprehension of complex theoretical concepts in relation to modules that are taught solely with the traditional lecture/seminar format. [4] Jennifer M Weller et al. [5] also recommended that ‘ Simulation Based Education’ needs to be integrated into medical curricula at the development stage, with careful attention paid to transfer of skills learnt to the real clinical environment. In a Malaysian medical school, role plays have been used to teach communication skills in primary care medicine. [6]

Table. 1. Pre and Post intervention questions with correct response (n = 144)

|  |  |
| --- | --- |
| Question  | Correct Response  |
| In case of an epidemic, epidemiological investigations should be delayed until the laboratory results are available.  | False  |
| First step in investigation of an epidemic is  | Verification of diagnosis  |
| What is the basic and essential criterion for confirmation of existence of an Epidemic?  | Observed frequency is in excess of the expected frequency of disease  |
| During epidemic investigation, till how long search for new cases to be done?  | Period twice the incubation period of suspected disease since the occurrence of last case.  |
| The document used to collect the data from cases and exposed persons during epidemic investigations is  | Epidemiological case sheet  |
| During epidemics investigation, there is no need to conduct medical survey for those people who are exposed to disease but do not develop disease. It is applicable only for cases (those who develop disease).  | False  |
| Epidemiological case sheet can be administered by trained lay health workers for collecting data during epidemic  | True  |
| ‘ Control measures’ is not a part of investigation of an epidemic  | False  |
| If large numbers of people are affected at same time with similar manifestations and common source, it can be an epidemic  | True  |
| Ideally how many steps are there for investigation of an epidemic?  | Ten  |
| During epidemic situations, geographical information is best displayed by  | Spot Map  |
| What will be the ideal step after ‘ defining the population at risk’ during investigation of an epidemic?  | Rapid search for all cases and their characteristics  |
| Epidemic/Outbreak ‘ is confined to only communicable diseases.  | False  |
| Data analysis should be in preference to time, place and person  | True  |
| In case of food poisoning epidemic, there is no need of comparison of observed frequency and expected frequency  | True  |

Table. 2. Mean marks of participants (n = 144)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Mean marks (out of 15)  | S. D.  | t value  | p-value  |
| Pre test  | 5. 16  | 2. 06  | 42. 87  | < 0. 001  |
| Post test  | 12. 01  | 1. 18  |  |

Present study revealed significant improvement in knowledge of participants about epidemic investigations from pre to post intervention as a result of ‘ Role Play Simulation Based Education’ (t = 42. 87, p < 0. 001) (Table 2). Statistically significant difference was observed for all fifteen questions.

However prior to an intervention, poor level of knowledge was found amongst participants regarding certain aspects of epidemic investigations like Spot Map, criteria for confirmation of epidemic, period of investigation of an epidemic etc.( Table 2).

The present study reiterates the need for incorporation of innovative methodologies like simulations along with traditional methods for better learning of students. At some places, methodology like ‘ Role Play’ has been regular teaching method in medical colleges. [7] At the University of Heidelberg, Germany, introducing role plays augmented the realism of technical training and improved doctor-patient communication and to teach students to obtain a sexual history and discuss sexual health issues. [8] Role-play is simple form of simulation which can be a valuable teaching tool for medical education, requiring few resources and allowing students to look at the material they are learning in a new light.

CONCLUSIONS

Present study reported significant improvement in knowledge of undergraduate medical students pertaining to epidemic investigation from pre to post-intervention as a result of role play method. It shows that even a simple simulation form like role play can make significant change in knowledge of medical students about very important topic i. e. ‘ Epidemic Investigation’ in Community Medicine subject.

ACKNOWLEDGEMENT

We heartily acknowledge the cooperation and support of Dr. Shekhar M. Kumbhar for conduction of this study.

DECLARATION OF INTEREST

The author reports no conflicts of interest. The author alone is responsible for the content and writing of the article.

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