

Effect of simulation based education on medical knowledge



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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 methodologies 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 its 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 <https://assignbuster.com/effect-of-simulation-based-education-on-medical-knowledge/>

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 7th 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

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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 <https://assignbuster.com/effect-of-simulation-based-education-on-medical-knowledge/>

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

investigation

s should be False

delayed until

the

laboratory

results are

available.

First step in

investigation Verification

of an of diagnosis

epidemic is

What is the
 basic and Observed
 essential frequency is
 criterion for in excess of
 confirmation the expected
 of existence frequency of
 of an disease
 Epidemic?

During Period twice
 epidemic the
 investigation incubation
 , till how period of
 long search suspected
 for new disease since
 cases to be the
 done? occurrence
 of last case.

The Epidemiologi
 document cal case
 used to sheet
 collect the
 data from
 cases and
 exposed

persons
during
epidemic
investigation
s is

During False

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).

Epidemiologi

cal case

sheet can be

administered

by trained

True

lay health

workers for

collecting

data during

epidemic

' Control

measures' is

not a part of

False

investigation

of an

epidemic

If large

True

numbers of

people are

affected at

same time

with similar

manifestatio

ns and
common
source, it
can be an
epidemic

Ideally how
many steps
are there for
investigation Ten
of an
epidemic?

During
epidemic
situations,
geographical Spot Map
information
is best
displayed by

What will be Rapid search
the ideal for all cases
step after ' and their
defining the characteristic
population at s
risk' during

investigation
of an
epidemic?

Epidemic/
Outbreak ' is
confined to
only False
communicab
le diseases.

Data
analysis
should be in
preference True
to time,
place and
person

In case of True
food
poisoning
epidemic,
there is no
need of
comparison
of observed

frequency

and

expected

frequency

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

| | Mean marks (out of 15) | S. D. | t valu e | 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.

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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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