MANIKIN DEMONSTRATION IN TEACHING CONSERVATIVE MANAGEMENT OF POST-PARTUM HAEMORRHAGE: A COMPARISON WITH CONVENTIONAL METHODS

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ABSTRACT

BACKGROUND

Even though there are many innovative methods to make classes more interesting and effective, in my department, topics are taught mainly by didactic lectures. This study attempts to compare the effectiveness of manikin demonstration and didactic lectures in teaching conservative management of post-partum haemorrhage.

OBJECTIVE

To compare the effectiveness of manikin demonstration and didactic lectures in teaching conservative management of post-partum haemorrhage.

MATERIALS AND METHODS

This is an observational study. Eighty four ninth-semester MBBS students posted in Department of Obstetrics and Gynaecology, Government Medical College, Kottayam were selected. They were divided into 2 groups by lottery method. Pre-test was conducted for both groups. Group A was taught by manikin demonstration. Group B was taught by didactic lecture. Feedback response from the students collected after demonstration class was analysed. Post-test was conducted for both the groups after one week. Gain in knowledge of both the groups were calculated from pre-test and post-test scores and compared by Independent sample t test.

RESULTS

The mean gain in knowledge in group A was 6.4 when compared to group B which is 4.3 and the difference was found to be statistically significant. All of the students in group A felt satisfied and more confident after the class and wanted more topics to be taken by demonstration.

CONCLUSION

Manikin demonstration class is more effective in teaching conservative management of post-partum haemorrhage and this method can be adopted to teach similar topics in clinical subjects.

KEYWORDS

Manikin Demonstration, Didactic Lecture, Competency Based Medical Education.

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INTRODUCTION: Medical education in India is now in the process of transition from traditional time based education to competency based education. This involves defining program outcomes, providing relevant learning opportunities and assessing the students for competence.

Post-partum haemorrhage is one of the dreaded complications that is encountered in labour room. An Indian Medical Graduate is expected to conduct normal delivery and identify any complications. This is one the core competencies to be achieved.

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They should start appropriate management of these conditions till they get expert help[1]. In our setting, these topics are taught traditionally by didactic lectures, which are the most common teaching learning methods employed. These students are also exposed to one month posting in labour room during which time they can observe and take part in the events like normal labour and complications. With mushrooming of medical colleges in each district, the exposure to patients is becoming less over the years especially in medical colleges in private sector. Some patients may also refuse student involvement. There is also a rising trend in rates of caesarean section, leading on to further decline in the number of patients delivering normally. All these factors have led to thinking of alternative method of teaching and learning using simulators.[2]

Traditional method of teaching and learning has become no longer sufficient. Today's generation of medical students and doctors have grown up in a multimedia civilization, the so called-'new gen'. It is insufficient and unreasonable to teach them using methods that has been developed decades ago. By introducing newer methods, we will be able to catch up with them and cover the current lacunae. Patient simulation is emerging as an educational tool where the students can be taught, they can learn and practice in a safe and controlled environment [3]. By learning and practicing in simulators, the quantity of medical incidents can be reduced, thereby reducing medical accidents.[4]

In the emerging era of Competency Based Medical Education, more importance is being given to affective and psychomotor domains of learning, although these domains were already there for decades.[4] Even though students are found to have reasonably sound knowledge, they are found to be deficient when faced with real clinical situations, in performing skills, applying knowledge into practice. Appropriate and timely management of critical events or situation is the core of clinical competence. But these cannot be taught in real patients. Simulation means creation of an artificial environment which is the replica of the real situation in a simpler form. The aim is to facilitate learning and practice without the risk of real life experience. Simulators may be classified based on fidelity.

Simulators can be used to train undergraduates, residents, and practicing doctors. Simulation training in undergraduate medical education is also important because they have only one year to transit from a theoretical environment of four and a half years of MBBS to dealing with patients independently.[4] In addition, most adverse events are in the first few years of graduation. Scheduled simulation can complement traditional clinical based training. The curriculum time allotted to each procedure should be as per the targeted attainment level.

Educational simulation tools and techniques can be classified into six different technological levels. They are written simulations, three-dimensional models, screen-based simulators, standardised patients, intermediate fidelity patient simulators, and interactive patient simulators.[5]

OBJECTIVE: To compare the effectiveness of manikin demonstration and didactic lectures in teaching conservative management of post-partum haemorrhage.

MATERIALS AND METHODS:

Resources: Female manikin, Cervical inspection set, Suction cannula, condoms, Urobag, Vaginal pack, intravenous fluid, Drip set, Drip stand, intravenous cannula 16 G, 18 G, Foley catheter.

Instrument: Questionnaire, Pre-test, Post-test.

Data Collection Procedure: This was an observational study. After submitting the project proposal, institutional review board sanction was obtained on 30.10.2014. The study subjects were the ninth-semester MBBS students-2010 MBBS batch coming for their posting in the Department of Obstetrics and Gynaecology, Government Medical College, Kottayam. Those students who were absent either during the class or during pre-tests or post-tests were excluded from the study. The study was conducted from November 2014 to March 2015.

A total of 84 students were divided into two groups by lottery method. A pre-test was given for both groups. Group A was further divided into smaller groups and were taught about conservative management of post-partum haemorrhage by demonstration in manikin. Group B was taught about conservative management of post-partum haemorrhage by didactic lecture. They were given a questionnaire at the end of class for evaluating response. The students were also tested by a written post-test after one week. To avoid ethical issues, those students who were taught by lecture were taught once again by manikin demonstration.

Data Analysis: Pre-test scores were deducted from post-test scores to obtain the knowledge gain. The data was analysed by independent sample t test. The response collected by questionnaire was also analysed.

OBSERVATION AND RESULTS: When the response of the students were assessed, majority of the test group (Manikin demonstration) students (66.7%) rated this class as excellent. The students were happily willing to participate in the study. All of them opined that (n=42) similar topics to be taken by demonstration class and that they felt more confident. They were very much satisfied and said that they were looking forward to similar classes. The demonstration of procedures in the manikin and interaction helped in the learning process. All were eager to try to make condom tamponade and thus practising what they have learned.

When the marks of the pre-test scores (Maximum-10) were analysed, the mean pre-test score of control group was 2.4, and that of test group was 1.8. The gain in knowledge in each group was calculated from reducing pre-test scores from post-test scores (Figure 1-Box diagram). The mean gain in scores (Knowledge gain) was 6.4 in demonstration group and its 4.3 in lecture group. Then mean gain of two groups were analysed using independent sample t test to know the effectiveness of intervention (Table 1) and the difference was found to be statistically significant with p value <0.001. (Table 2 showing the statistical tests in detail).

	Std. Deviation	T	Significance
Manikin	2.1	5.1	P<.001
Lecture	1.6		

Table 1: Effectiveness of the Intervention

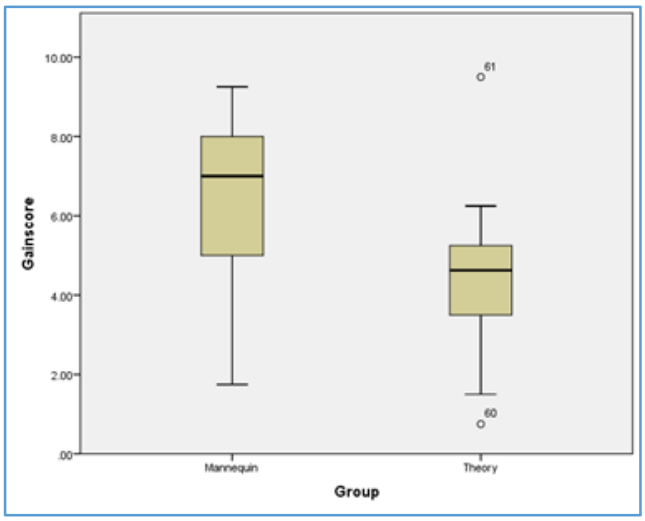

Fig. 1: Box Plot Diagram to Show the Scores

Group		Pre-test score	Post-test score	Gain score
Manikin	Mean	1.8	8.2	6.4
	Median	1.5	8.3	7.0
	Std. Deviation	1.1	1.4	2.1
	Minimum	.5	5.8	1.8
	Maximum	5.0	10.0	9.3
	Percentiles			
	25	1.0	6.8	4.9
	50	1.5	8.3	7.0
	75	2.5	9.3	8.0
Theory	Mean	2.4	6.7	4.3
	Median	2.0	6.8	4.6
	Std. Deviation	1.4	1.6	1.6
	Minimum	.5	2.5	.8
	Maximum	7.0	10.0	9.5
	Percentiles			
	25	1.5	6.3	3.5
	50	2.0	6.8	4.6
	75	3.6	7.5	5.3

Table 2: Descriptive Statistics with Central Tendency, Dispersion and Percentiles

DISCUSSION: Manikin or human patient simulator is an excellent teaching tool as it stimulates student curiosity and makes knowledge acquisition and understanding easier. Medical simulation allows trainees to experience realistic patient situations without exposing patients to the risks inherent in trainee learning and is adaptable to situations involving widely varying clinical content[6]. Literature showed similar studies. A study investigated the effectiveness of Human Patient simulator based teaching of cardiovascular physiology to first-year medical students. The results showed a marked improvement in test scores after the HPS session. Most of the students felt that human patient simulator was a better teaching tool and raised more questions than lectures. They wanted more topics to be taught this way, as they could apply and re-enforce textbook knowledge, and visualise real-time changes. However, they felt that their experience could have been enhanced with more time and smaller groups.[7] Another similar study is there with the objective to determine whether simulation was more effective than traditional didactic instruction to train crisis management skills to labour and delivery teams. There was no statistical difference found between the groups on the pre training and pretesting multiple-choice questionnaire scores. But the performance testing showed a statistically significant higher scores.[8] Another study done among pharmacy students also prove that manikin demonstration class were better. About 98% of the students either strongly agreed or agreed that they material was relevant to their current studies. They also opined that they learned better about clinical patient care when they were taught with HPS manikin.[9] Wide acceptance of simulation based training will not occur, until the efficacy and effectiveness in cost effectively improving learning and patient outcomes are proved. There is of course enthusiasm of students, high levels of realism, construct and content validity. There are no studies proving the effectiveness in improving patient outcomes.

This study has once again proven that manikin demonstration is a better teaching learning method to teach topics related to psychomotor domain. This study has utilised a low fidelity simulator. But results can be more attractive if a high fidelity simulator was used.

CONCLUSION: Manikin demonstration class is more effective in teaching conservative management of post-partum haemorrhage when compared to didactic lecture

Implication: Manikin demonstration classes can be used to teach psychomotor domain predominating topics for MBBS students in Obstetrics and Gynaecology. This method can be adopted in other clinical specialities also. But certain limitations have been identified during the course of this study. More time and effort will be needed from the teacher as the students are to be split into smaller groups resulting in increased number of classes. There will also be a need for more resources including equipment and space. In this era of technological advancement, medical education should utilise the technology to its advantage. This study also emphasises on the installation of skill labs in teaching hospitals.

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