

# Effectiveness of Manikin Demonstration over Conventional Lectures for Teaching Shoulder Dystocia.

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**Received:** April 2016.

**Accepted:** April 2016.

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## ABSTRACT

**Background:** Shoulder dystocia management necessitates a sound knowledge in diagnosis and applications of appropriate maneuvers. Conventionally this topic is taught with lectures in our institution. Objectives: 1. To compare the effectiveness of manikin demonstration to didactic lecture in teaching shoulder dystocia to undergraduate students. 2. To assess the attitude of students regarding inclusion of demonstrations sessions with manikin to their teaching schedule. **Methods:** This comparative study was conducted on 60 students attending their 8<sup>th</sup> semester posting in OBG in Kannur Medical College. Students were divided in to two batches, one receiving a didactic lecture class and the other a manikin demonstration on shoulder dystocia, following which a posttest evaluation was carried out with MCQs. The next day students were crossed over and classes taken using the two methods following which feedback from students were obtained and analyzed. **Results:** The posttest scores revealed that the group taught by manikin demonstration scored better when compared to the batch taught by lecture which was statistically significant. Feedback analysis showed that all students found manikin demonstration a more interesting method and majority felt this was the better method and helped in understanding the maneuvers. Peer opinion was that though manikin demonstration was more interesting, theoretical aspects could be better covered by a lecture and hence should be used as a complementary method to lecture. **Conclusion:** Manikin demonstration was more effective in teaching shoulder dystocia when compared to conventional lectures and was also associated with better learner satisfaction.

**Keywords:** Shoulder dystocia, Manikin demonstration, Didactic lectures, Posttest evaluation, Feedback analysis.

## INTRODUCTION

Shoulder dystocia complicates 0.15% to 2% of all vaginal deliveries and can be extremely dangerous for both a mother and her baby.<sup>[1]</sup> This is an emergency situation that a student might encounter during their labour posting. Shoulder dystocia is defined as a vaginal cephalic delivery where additional maneuvers are needed to release the shoulders following delivery of the head and gentle traction has failed or as a head-to-shoulder delivery interval of more than sixty seconds. This is an unpredictable condition, which can occur in up to 50% of women without any preexisting risk factors.

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It is associated with significant perinatal morbidity, up to 2.5% perinatal mortality and is the third most common cause for litigation in obstetrics.<sup>[2]</sup> Proper management requires not only a sound knowledge

of the condition, but also good communication and teamwork skills. Currently lectures aided by power point slides and images are being used in the department for teaching shoulder dystocia to undergraduate students. This topic involves several maneuvers requiring a lot of imagination to understand. This is reflected in the inadequate performance of the students during examinations as well as the lack of awareness among interns. Use of manikin demonstration has been found to be useful in teaching procedure related topics like mechanism of normal labour, but has not yet been utilized for teaching shoulder dystocia.

Manikins are popular for obstetric emergency training courses.<sup>[1]</sup> Acquisition, retention and recall of knowledge are the most important aspects for this learning process, and it is possible that hands-on training with simulators may promote and strengthen the construction of solid networks of memory.<sup>[3]</sup> Studies have shown that a simulator-based education session focusing on management of delivery and shoulder dystocia yielded significantly higher short-term knowledge scores and greater satisfaction among learners than an image-based interactive lecture session.<sup>[4,5]</sup>

Unlike a lecture where the whole batch can be involved, manikin demonstration is suitable only for smaller batches and hence requires more time and effort. This issue can be tackled by incorporating manikin demonstration to the regular clinical teaching schedule during labour posting.

This study compared the effectiveness of a manikin demonstration to a didactic lecture in teaching shoulder dystocia to undergraduate students and also assessed their attitude on inclusion of such sessions to their teaching schedule.

It is well known that blood flow through arteries is influenced by various mechanical and hydraulic factors, but gender differences in morphometric features of coronaries like diameter and wall thickness do not seem to have attracted much attention.<sup>[5]</sup> The present work is an attempt to study the origin, course, variation and anomalies of coronary arteries in cadaveric human hearts.

### MATERIALS AND METHODS

Sixty students (three batches of 20 each) attending their eighth semester, posting in the department of obstetrics and gynecology in the Kannur Medical College over a period of 4 months from June 2015 to October 2015 were included in the study after obtaining permission from the institutional ethical committee and informed consent for participation from the students. Each batch was divided in to two groups randomly in to a Lecture or Manikin group. A one hour interactive lecture on shoulder dystocia was taken for the lecture group followed by an assessment using ten MCQs. Subsequently, the topic was taken with the help of a one hour demonstration with manikin to the manikin group, the same day by the same teacher followed by a posttest with ten MCQs. The various maneuvers to relieve shoulder dystocia were demonstrated to the manikin group according to the HELPER algorithm.

On the following day the groups were crossed over, with the lecture class for the manikin group and manikin demonstration for the lecture group. Post test was not conducted on the second day. Learner satisfaction was assessed using a questionnaire given to both the batches on the second day. The classes were taken in the presence of colleagues and interns posted in the department and their opinion regarding the two methods of teaching was also noted. A statistical analysis of the feedback was made using chi square test. The mean of the scores were analyzed using unpaired t test. Ethical issues were taken care of by taking classes for both the groups using both methods.

### RESULTS

The marks of students in the lecture group on both sessions were grouped together and the marks of the students in the manikin groups on both sessions were grouped together for statistical analysis. The mark distribution of the students is given in [Table 1].

**Table 1:** Distribution of MCQ marks among the study groups.

MCQ Score	Lecture group		Mannequin group	
	No	%	No	%
5	1	3.3	0	0.0
6	2	6.7	0	0
7	6	20.0	1	3.3
8	9	30.0	2	6.7
9	7	23.3	16	53.3
10	5	16.7	11	36.7
Total	30	100.0	30	100.0

Unpaired t test was used to compare the marks of the students in the two groups. The mean marks of the students taught using manikin demonstration was 9.23 while for the lecture was 8.13. Hence, the students in the manikin group scored better marks than those in the lecture group and the results were statistically significant as shown in [Table 2].

**Table 2:** Distribution of marks among lecture and manikin group.

Group	N	Mean	Standard deviation	p value
Lecture	30	8.13	1.306	0.00 (Sig)*
Manikin	30	9.23	.728	

\*Significant

The feedback questions were analyzed using chi square test. Each question was analyzed separately [Figure 1]. 93.4% of all students felt that manikin was a better method of teaching shoulder dystocia. All students were of the opinion that manikin demonstration was the more interesting method. 91.7% of all students said they understood the topic better with manikin demonstration. 96.7% of all students said they understood the maneuvers better with manikin demonstration. 78.3% of students felt manikin demonstration inspired them to learn further. 91.7% of all students felt that manikin demonstration was more interactive. 61.7% of students felt manikin demonstration helped in getting better scores whereas 38.3% felt lecture was more useful in scoring. 70% of all students felt they were more confident on the topic after manikin demonstration whereas 30% felt they were more confident following lecture class. 73.3% students felt they could recollect better following manikin demonstration.

There was an obvious preference to manikin demonstration in response to all the questions.

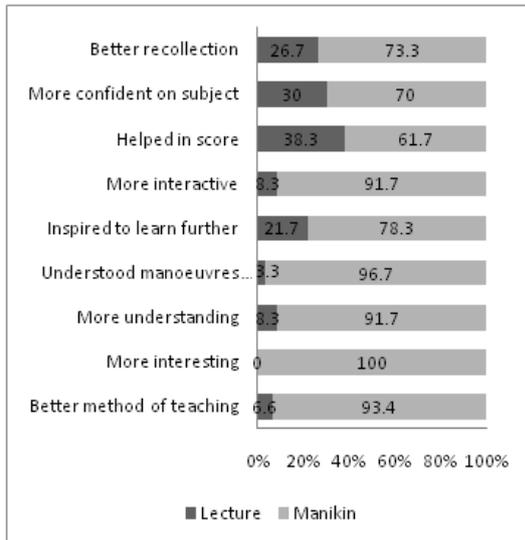


Figure 1: Analysis of feedback form.

## DISCUSSION

Studies thus far show that use of simulation in training medical students and residents is helpful in strengthening students' knowledge base and in evaluating their performance.<sup>[6]</sup> Students appreciate simulation-based education as "an opportunity to learn new skills in a safe environment".<sup>[7]</sup> Several different medical disciplines have conducted studies to evaluate the efficacy of simulation in training residents and students in their particular field. Simulation in the field of obstetrics has been used to teach residents how to manage obstetric emergencies and how to recognize and avoid the pitfalls in managing difficult deliveries.<sup>[8-10]</sup>

Several studies have shown that training for shoulder dystocia is essential and use of manikins is a necessary part of this training. A study on training for shoulder dystocia by Joanna F. Crofts et al. verifies the need for shoulder dystocia training.<sup>[11]</sup> In the study only 43% participants could achieve delivery before training, whereas all could achieve delivery in a simulated shoulder dystocia following training.

In the present study, only the written scores were evaluated. Performance scores were not assessed. A study comparing didactic lectures to simulation in teaching obstetric emergencies to nursing students and residents conducted by Daniels K et al showed equal written test scores in both the groups, whereas performance scores were more in the simulation-trained group.<sup>[12]</sup> They have concluded that simulation should be used to enhance obstetric emergency training. Perhaps simulation provides better instruction for certain tasks, such as professionalism and technical skills, whereas didactic or problem-based learning teaches patient assessment and treatment algorithms more effectively.<sup>[13]</sup> Analysis of written scores in the

present study shows that manikin training improved the written scores of the students; hence the cognitive aspect is also improved by simulation.

A study by Tia P. Andighetti et al. on Shoulder dystocia and postpartum hemorrhage simulations, revealed that the use of simulation significantly increased the students' confidence in managing these conditions.<sup>[14]</sup> In the present study also students were more confident on the topic following manikin demonstration.

According to Reynolds, D Ayres-de-Campos, A Pereira-Cavaleiro, L Ferreira-Bastos, a significantly higher short-term reinforcement of knowledge and greater learner satisfaction were obtained using simulation sessions compared to image-based lectures when teaching routine management of normal delivery and resolution of shoulder dystocia to midwives in training.<sup>[4]</sup> In the present study also better learner satisfaction and recollection was found with manikin demonstration.

Opinion of colleagues and residents was that lecture brought out theoretical aspects like causes and complications better, which could not have been sufficiently explained during manikin demonstration. All agreed on the fact that manikin demonstration was certainly better at explaining maneuvers and management. They too have concluded that manikin demonstration should be used as an adjunct to lectures and will not substitute conventional lectures.

Shoulder dystocia identification and early management is an important competency and hence incorporation of manikin demonstration to the clinical teaching schedule in addition to the regular lecture classes is necessary to achieve this.

**Limitation:** Only the cognitive domain was assessed by the present study. Psychomotor domain was not assessed.

## CONCLUSION

Manikin demonstration was more effective and in teaching shoulder dystocia to undergraduate students. It was also associated with better learner satisfaction.

**Implications:** Manikin demonstration should be used as an adjunct to conventional lectures in teaching procedure related topics like shoulder dystocia, post-partum hemorrhage and normal delivery.

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**How to cite this article:** Santhosh S, Asokan KM. Effectiveness of Manikin Demonstration over Conventional Lectures for Teaching Shoulder Dystocia. Ann. Int. Med. Den. Res. 2016;2(4):115-18.

**Source of Support:** Nil, **Conflict of Interest:** None declared