Original Article

Impact of Mannequin-based Navjaat Shishu Surakasha Karyakram training program on health professionals

Abstract

Background: This study explores the effectiveness of Navjaat shishu surakasha karyakram (NSSK) training using mannequin for imparting neonatal resuscitation skills to health professionals. **Materials and Methods:** NSSK training was conducted at district hospitals for the three districts of western Uttar Pradesh (India) by Dept. of Community Medicine, L.L.R.M. Medical College Meerut (U. P.). Total number of participants included was 312. Methodology included lectures, audio-visuals, and individual practice on mannequins followed by performance evaluation and posttest (written) based on format given in NSSK module. **Results**: A total of 92-95% participants expressed that their confidence in handling newborns and conducting deliveries improved after training on mannequins and will be useful where only few resources and facilities are available. The best part of the training was bag and mask resuscitation and Kangaroo mother care. **Conclusion:** Although Mannequin-based trainings will be difficult and costly, they may be justified to determine how this technology can best be applied.

Key words: Kangaroo mother care, mannequins, Navjaat Shishu Surakasha Karyakram training program

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INTRODUCTION

Worldwide approximately one million babies die per year due to asphyxia out of which about one-third (approximately 3 lakhs) is contributed by our country.[1] A single intervention – resuscitation – deals with the problem of birth asphyxia as it occurs. Advanced procedures (chest compression, intubation, use of drugs) are needed only in a small proportion of cases. These procedures have strict indications and are beneficial only in specific circumstances and if carried out by an experienced person.

In reality, even the simplest equipment is frequently not available and skilled health workers are lacking. In many places, only one birth attendant is normally present at the birth, dividing her attention between the mother and the newborn.

Basic resuscitation, done correctly, will help *most*, even where only few resources and simple training are available.

Navjaat Shishu Suraksha Karyakram (NSSK) is a simple module-based training on basic newborn care and resuscitation using mannequin. Training of doctors, nurses, auxiliary nurse midwives (ANMs) with appropriate knowledge and skill of neonatal resuscitation is very important to improve the quality of newborn survival. NSSK training is launched by Ministry of Health and Family Welfare, Government of India in collaboration with Indian Academy of Pediatrics for medical officers (MO), staff nurses (SNs), and ANMs. This study explores the effectiveness of NSSK training using mannequin for imparting neonatal resuscitation skills to health professionals.

MATERIALS AND METHODS

Two days NSSK training for MOs, SNs, and ANMs was conducted at district hospital for the districts of Bijnore, Saharanpur, and Muzaffarnagar in Uttar Pradesh (India) by two state

trainers from Dept. of Community Medicine, L.L.R.M. Medical College Meerut (U.P.), and one local trainer from the respective district from November 2012 to February 2013. Total number of participants was 312 for 13 batches, each batch included 24 participants, 8 each from MOs, SN, and ANMs group of health professionals. They were given pretest that included written evaluation and performance evaluation based on the standard format given in NSSK module. The training methodology included lectures followed by small group discussion in the form of module reading, demonstrations, videos, and individual practice on mannequins in groups. At the end of all the sessions, posttest was given that included written test and performance evaluation test as per NSSK module.

RESULTS

After 2 days NSSK training views were invited from the participants, the participants appreciated NSSK training methodology and ideas behind the training practices with mannequins. Participants (92-95%) expressed their confidence in handling newborns improved after training on mannequins. They appreciated videos, demonstrations, systematic, and individual approach. The best part of the training was resuscitation with bag mask and Kangaroo mother care (KMC). The participants opined that this type of training on mannequins will be really useful in places where only few resources and facilities are available for conducting deliveries and newborn care. The workshop also helped in active thinking. Bar diagram in Figure 1 shows performance evaluation test part 1 of the participants that was conducted before and after training, which included preparation before delivery, assessment of newborn care, initial steps of new born care, and newborn resuscitation. The bar shows performance of the participants, which was poor in the pretest (20.0%) improved markedly in the posttest (92.0%) and performance evaluation test part 2, which included hand washing technique, temperature maintenance, KMC and breast feeding practices, etc., Bar shows that average of performance in pretest was 25% and in posttest average of performance was improved up to 95%.

Figure 2 shows the performance of participants regarding basic new born care and resuscitation written test part 1 and 2 before and after the training, which include present newborn care practices, preparation of delivery, newborn resuscitation, hand washing technique, temperature maintenance, etc. The bar shows performance of the participants, which was poor in the pretest improved markedly in the posttest.

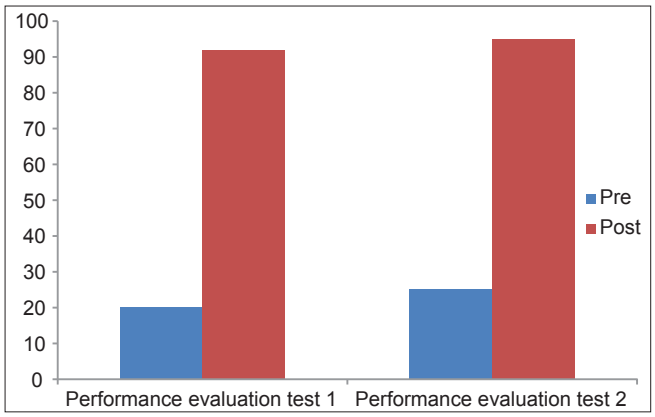

Figure 1: Performance evaluation test before and after training

DISCUSSION

The mannequin-based fully interactive patient simulator was first developed in the late 1960s and reinvented in the late 1980s.[2] The first available documented evidence on the use of human patient simulation mannequins (HPSMs) in clinical education was in 1969 when Denson and Abrahamson used *Simone* ™ to supplement the training of anesthetists.[3,4] Since then, various HPSMs have been developed and are currently used in specialist medical fields like anesthesia and critical care and more recently in undergraduate nursing and allied health programs.[5] These devices can replicate a large set of features of the human body and its physiology and pharmacology.

Mannequins were used in NSSK training program for health professionals along with different imaginary case scenarios to impart knowledge and skills to the participants and performance of the participants, which was poor in the pretest and improved markedly in the posttest. Menon *et al.*,[6] also depicted the same in her study that performance of the participants has improved markedly in the posttraining test. Bremner *et al.* also found that the use of simulation achieves quality outcomes where the potential for error and large-scale disaster is high.[7]

In the present scenario of technologies and environments of teaching, these types of skills are challenging. One strategy that is being adopted is the use of simulation technologies. Although there are numerous definitions of simulation, the one described by Gaba[2] has been accepted in this context.

Study highlights the use of mannequin and simulation techniques in training and teaching programs of healthcare professionals that give skills in addition to knowledge, which is critical in medical practice particularly in newborn care and resuscitation.

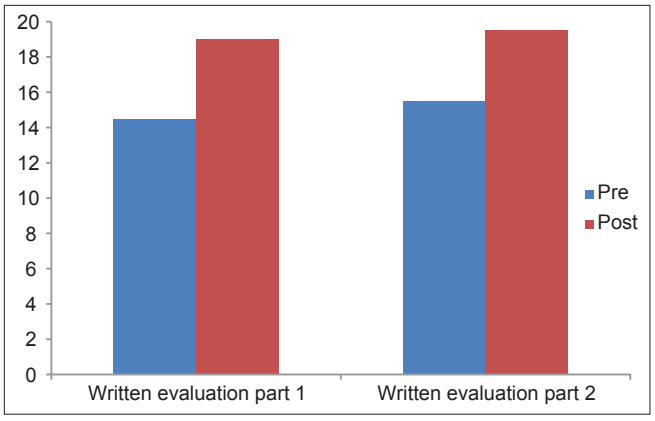

Figure 2: Basic new born care and resuscitation written evaluation test before and after training

CONCLUSION

Although there is currently little evidence that simulation training improves patient care, the experience with simulation in other industries and the high face validity of their applications in healthcare has led many institutions to adopt the technology. It is likely that simulators will continue to be used and their role in training of medical personnel will grow. Definitive experiments to improve our understanding of their effects on training will allow them to be used more intelligently to improve provider performance, reduce errors, and ultimately, promote patient safety. Although such experiments will be difficult and costly, they may be justified to determine how this technology can best be applied.

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