Implementation of cardiopulmonary resuscitation workshop in first MBBS

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Abstract

Context: Students should be exposed to early clinical scenario so that they start developing competency-based learning right from their MBBS 1st year. Medical Council of India has recognized this need and has suggested early clinical exposure of MBBS 1st year students in their document Vision 2015. Medical education in India needs change for achieving desired competencies. It has been concluded that Indian medical undergraduates have inadequate knowledge in cardiopulmonary resuscitation (CPR). Aims: To implement CPR workshop in MBBS 1st year, and to study the impact of CPR workshop among MBBS 1st year students. Design: Interventional study. Materials and Methods: CPR workshop was conducted with the help of Faculty of Anesthesia and Physiology among MBBS 1st year students. Teaching learning methods employed were lecture, demonstration, and hand-on practice on mannequin in small groups. The evaluation was done by pre- and post-standardized, validated questionnaire; direct observation procedural skill, and feedback questionnaire. Results: There was a significant improvement in knowledge of students as shown from results of pre- and post-questionnaire. About 84.24% students found the presentation excellent, 71.23% students found the demonstration excellent in terms of visibility and clarity, 63.7% students found the instructions excellent. All students were successful in acquiring skills of CPR as shown by results of directly observed procedural skills. Conclusions: Results of this study suggest that the workshop provided students with sound basic knowledge and adequate practical skills in CPR. CPR workshop should be carried out every year among undergraduate students. CPR workshop should be introduced in MBBS 1st year curriculum.

Key words: Cardiopulmonary resuscitation workshop, competency, undergraduate students

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Introduction

In traditional medical curriculum, the subjects taught in preclinical stage lack proper integration leading to fragmentation of knowledge and lack of relevance for the students. The clinical exposure of MBBS 1st year students is very little and scattered.

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Due to little clinical exposure, the undergraduates are not confident enough to tackle emergencies later on. Students should be exposed to early clinical scenario early so that they start developing competency-based learning right from MBBS 1st year. Medical Council of India has recognized this need and has suggested integrated teaching as well as early clinical exposure of MBBS 1st year students in their document Vision 2015.[¹] Srimathi[²] in his study had concluded that the foundation course is essential for the students entering MBBS.
and its implementation will help the medical students to acquire the basic knowledge, attitudes, and skills, which will help them to become competent doctors in future. Medical education in India is at crossroads and needs change for achieving desired competencies. According to a study by Chandrasekaran et al., Indian medical undergraduates have inadequate knowledge and skills in cardiopulmonary resuscitation (CPR). The base of tackling this lack of competency can be laid in the preclinical stage of medical students by training MBBS 1st year students in CPR.

It has been recommended that CPR awareness as well as training should be provided to every person because providing effective CPR at the correct time can bring down mortality. According to American Heart Association, each and everyone should learn CPR. It has been observed that fresh medical students lack proper knowledge, skills, and attitude (KSA) regarding CPR (unconscious incompetence). Our aim was to bring competency in 1st three levels of Miller’s pyramid that is, knows, knows how, and shows how in the preclinical stage of medical students. Before the workshop, topics relevant to CPR were covered in cardiovascular and respiratory system. Organizing CPR workshop in MBBS 1st year provides necessary basic knowledge, attitude and skills to students, required for conducting effective CPR in future. Later on workshop can be organized in MBBS 3rd year also, with modifications in format to suit the level of students. This reinforces the KSA of students and by internship; the students attain state of unconscious competence regarding the delivery of CPR.

Materials and Methods

With prior permission from Institutional Review Board, 146 MBBS 1st year students were enrolled in the study after taking informed written consent. Initially, faculty of Physiology Department was trained by Faculty of Anesthesia for CPR. Thereafter, CPR workshop was conducted by Physiology Department with the help of Faculty of Anesthesia for MBBS 1st year students. Students were divided into five groups for the workshop. Pretest of all students was taken before the workshop with the help of 15 standardized validated questionnaires. The pretest was followed by lecture on importance of CPR. Thereafter, there was demonstration of CPR on mannequin, which was followed by hands-on training and practice by MBBS 1st year students on mannequin. Duration of single workshop was 4 h. Five such workshops were conducted to accommodate all students.

Assessment of skills was done via direct observation of procedure on mannequin by checklist, splitting the procedure into five steps. A desired competency level was targeted, and students were trained until they achieved desired competency. Desired competency was “shows how” level in the students. However, to bring in measurability, we had divided the procedure in five steps. After the workshop, posttest was administered for assessing gain in knowledge. Feedback questionnaire was administered to students for the evaluation of workshop. Perception of students was obtained from feedback questionnaire using a 5-point Likert scale [Table 1].

Results

There was statistically significant improvement in knowledge of students as shown from results of pre- and post-questionnaire [Table 2]. The steps followed for directly observed procedural skills are shown in Table 3. According to results of assessment of skills, 23.29% students could complete all steps correctly in 1st attempt, 49.31% in 2nd attempt, and 27.4% students required 3rd attempt to correctly complete all steps [Figure 1].

According to analysis of feedback questionnaire, 84.24% students found the presentation excellent, 71.23% students found the demonstration excellent in terms of visibility and clarity, 63.7% students found the instructions excellent [Figure 2]. All students were of the opinion that CPR workshop should be included in MBBS 1st year curriculum.

Discussion

Our results show that there is a significant increase in knowledge regarding CPR among MBBS 1st year students after the workshop. Studies by Pande et al., Aparicio et al., and

Table 1: Results of feedback questionnaire (all figures in percentage)

| Question/Likert scale | 1 | 2 | 3 | 4 | 5 |
|-----------------------|---|---|---|---|---|
| How was the presentation? | Nil | Nil | Nil | 15.75 | 84.24 |
| How was demonstration, in terms of visibility and clarity? | Nil | Nil | 4.11 | 24.65 | 71.23 |
| How were the instructions given in hands-on training? | Nil | Nil | 3.42 | 32.88 | 63.7 |

Likert scale - 1: Poor; 2: Average; 3: Good; 4: Very good; 5: Excellent

Table 2: Results of pre- and post-questionnaire

| Pretest score | Posttest score | P | Significance |
|---------------|---------------|---|--------------|
| 7.23±1.97     | 13.07±1.49    | <0.0001 | Highly significant |

SD: Standard deviation

Table 3: Checklist for directly observed skills

| S. No | Steps |
|-------|-------|
| 1     | Call ambulance |
| 2     | Check response |
| 3     | 30 chest compressions |
| 4     | Open airway |
| 5     | 5 rescue breaths |
Zamir et al.\textsuperscript{[7]} also showed that MBBS 1\textsuperscript{st} year students have inadequate knowledge about CPR and that the knowledge improved after CPR workshop. A study by Abbas et al.\textsuperscript{[8]} showed that knowledge regarding first aid and basic life support was more in trained students compared to untrained students. This shows that retention of knowledge is greater if proper training is imparted. Our study also showed that CPR workshop provided students with adequate practical skills to perform CPR on mannequin. Assessment of skills showed that many students required more than one attempt to perform all steps correctly. This indicates that practice is required for mastering required skills. Acquisition of skills indicates that the CPR workshop was successful. Studies conducted by Pande et al.\textsuperscript{[5]}, Aparicio et al.\textsuperscript{[6]} also showed similar results. Afzalimoghaddam et al.\textsuperscript{[9]} in their study conducted Objective Structured Clinical Examination for testing knowledge and skills of medical students and also found that both knowledge and skills increase after training. A study by White et al. has shown that effective CPR and early delivery of the shock can increase survival rates.\textsuperscript{[10]} Hence, acquisition of skills related to CPR could be the first step by undergraduate students for handling life-threatening emergency like cardiac arrest in future. However, such training should be reinforced every year for better outcome.

Analysis of feedback questionnaire showed that more than 60\% of students found the presentation, demonstration, instructions as well as overall workshop excellent, quiet useful, and fruitful. Since the students were trained by the department of physiology as well as anesthesia faculty, the MBBS 1\textsuperscript{st} year students found knowledge and skills acquired by workshop relevant since it had clinical application. CPR workshop was conducted after cardiovascular, and respiratory systems were taught to students in routine lectures. Learning method applied in this study was vertical integration; as a result, the students had a holistic view about resuscitation. The encouraging result of CPR workshop at our institute suggests that such workshops of fresh medical students are indeed feasible and should be adopted by all medical institutes for improving competency of fresh medical graduates.

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Conflicts of interest

There are no conflicts of interest.

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