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"Impact of Blended mode CPR training on Knowledge and Practice Regarding the American Heart Association (AHA) Revised Cardiopulmonary Resuscitation (CPR) Guidelines among B.Sc. Nursing 2nd Year and 3rd Year Students"

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Abstract: Cardiopulmonary Resuscitation (CPR) is a critical emergency intervention aimed at restoring circulatory flow and oxygenation during cardiac arrest. The American Heart Association (AHA) periodically updates CPR guidelines to improve survival rates and neurological outcomes, with the 2020 revisions emphasizing high-quality chest compressions, appropriate ventilation, automated external defibrillator (AED) use, and timely advanced life support. Nurses, as frontline responders, require up-to-date knowledge and skills to deliver effective resuscitation. B.Sc. Nursing students, particularly in their second year, are at a pivotal stage of integrating theory with clinical practice, making competency in CPR essential. This study evaluates the knowledge, attitude, and practice regarding the revised AHA CPR guidelines among second-year B.Sc. Nursing students at a selected nursing college in Indore. Findings will help identify gaps, inform targeted training programs, and enhance preparedness, ultimately contributing to improved patient outcomes in cardiac emergencies.

Keywords: - *Pre experimental study, Effectiveness, Knowledge and practice, Blended mode CPR training*

Introduction- Cardiopulmonary Resuscitation (CPR) is a life-saving emergency procedure performed to maintain circulatory flow and oxygenation during cardiac arrest until spontaneous circulation is restored. The American Heart Association (AHA) periodically revises CPR guidelines based on evolving scientific evidence to enhance survival rates and neurological outcomes. The most recent updates emphasize high-quality chest compressions, appropriate ventilation, use of automated external defibrillators (AEDs), and timely advanced life support interventions.

Nurses, being frontline healthcare providers, play a critical role in identifying cardiac arrest and initiating prompt CPR. B.Sc. Nursing students, during their clinical training, are often exposed to emergency situations where their knowledge and practice of CPR can significantly influence patient outcomes. However, research has shown that without regular training and updates, CPR knowledge and skills tend to decline over time. The 2nd year of the B.Sc. Nursing program is a crucial stage where students begin to integrate theoretical learning with clinical practice. Assessing their knowledge and practice regarding the revised AHA CPR guidelines is essential to ensure they are competent in delivering effective resuscitation.

This study aims to evaluate the level of understanding and practical application of the latest AHA CPR protocols among B.Sc. Nursing 2nd year students at a selected nursing college in Indore. The findings will help identify gaps, guide targeted training programs, and ultimately contribute to improved patient survival rates during cardiac emergencies. Nurses, being at the frontline of the emergency care system, play a pivotal role in timely and effective resuscitation during cardiac arrest. It is therefore essential to equip them with updated knowledge and skills based on the latest resuscitation guidelines. Assessing the existing knowledge, attitude, and

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practice of nurses regarding these guidelines is crucial for designing effective teaching–learning programs that enhance their competence. Since the release of the revised American Heart Association (AHA) CPR guidelines in 2020, only a limited number of studies in India have evaluated nurses' awareness and application of these updates. Recognizing this gap, the present study has been undertaken to assess the existing knowledge, attitude, and practice regarding the updated CPR guidelines among nursing students.

OBJECTIVES OF THE STUDY

1. To assess the pre-test and post-test knowledge on Blended mode CPR training among B.Sc. Nursing 2nd Year and 3rd Year Students regarding the AHA revised Cardiopulmonary Resuscitation (CPR) guidelines.
2. To assess the practice on Blended mode CPR training among B.Sc. Nursing 2nd Year and 3rd Year Students regarding the AHA revised Cardiopulmonary Resuscitation (CPR) guidelines.
3. To assess the effectiveness of Blended mode CPR training among B.Sc. Nursing 2nd Year and 3rd Year Students regarding the AHA revised Cardiopulmonary Resuscitation (CPR) guidelines.

Material and Methods

An institution-based pre-experimental study was conducted at a selected nursing college in Indore to assess the knowledge and practice regarding the revised AHA CPR guidelines. A non-probability purposive sampling technique was employed to select 100 participants from the nursing college, following respective sampling intervals. Out of these, 96 participants completed the study, resulting in a response rate of 96%. The data collection tool was a structured questionnaire developed by adapting items from established guidelines and relevant literature. The questionnaire comprised two sections: the first covered socio-demographic details, while the second included questions related to presentation, potential influencing factors, and CPR-specific knowledge and practice.

Data analysis was carried out using SPSS software. Both descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics (Chi-square test, t-test, and correlation analysis) were applied. A p-value of less than 0.05 was considered statistically significant. This methodological approach allowed for a comprehensive assessment of the participants' current knowledge and practical competence in CPR, as well as the identification of factors associated with variations in these competencies.

Result-

The analysis of the pre-test and post-test scores among the sample group indicates a substantial improvement in knowledge and practice regarding the revised Cardiopulmonary Resuscitation (CPR) guidelines after the Blended mode CPR training. In the pre-test, the mean score was 5.96 with a mean percentage of 22.79% and a standard deviation (SD) of 2.49, reflecting limited baseline knowledge and skills. Following the delivery of the Blended mode CPR training, the post-test mean score increased to 13.65 with a mean percentage of 59.6% and a higher SD of 3.63, suggesting both an overall improvement and a slight increase in score variability among participants. The calculated mean difference of 7.69 demonstrates a significant gain in knowledge and practice. The t-value of 13.98, when compared with the critical values at the given degrees of freedom, confirms that this improvement is statistically significant. The p-value (< 0.05) further supports that the observed difference between pre-test and post-test scores is unlikely due to chance.

Overall, these findings indicate that the Blended mode CPR training was highly effective in enhancing the knowledge and practice of among B.Sc. Nursing 2nd Year and 3rd Year Students regarding the revised CPR guidelines, thereby reinforcing the value of structured, multimedia-based educational interventions in nursing education.

Discussion

The findings of this study demonstrate that the Blended Mode CPR training significantly improved the knowledge and practice of B.Sc. Nursing 2nd and 3rd-year students

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regarding the revised AHA CPR guidelines. The marked increase in post-test mean scores compared to pre-test results suggests that the combination of traditional teaching and multimedia-based instruction effectively facilitated learning and skill retention. These results are consistent with previous studies, which have reported that interactive and multimedia-enhanced training methods lead to better comprehension and long-term retention of CPR skills compared to lecture-based approaches alone. The blended mode likely enhanced engagement, provided visual reinforcement of concepts, and allowed learners to revisit material at their own pace, thereby improving both cognitive and psychomotor competencies. The statistically significant improvement ($p < 0.05$) also emphasizes the importance of periodic training and refresher programs. Given that CPR knowledge and skills are known to deteriorate over time without practice, integrating blended learning modules into the nursing curriculum could be a sustainable strategy for maintaining competency.

Conclusion

The study revealed that Blended Mode CPR training significantly enhanced the knowledge and practice of B.Sc. Nursing 2nd and 3rd-year students regarding the revised AHA CPR guidelines. The substantial improvement in post-test scores, supported by statistical significance, highlights the effectiveness of combining traditional teaching with multimedia-based learning. This approach not only improved immediate learning outcomes but also holds potential for better skill retention. Incorporating blended CPR training into the nursing curriculum can strengthen students' preparedness for cardiac emergencies, ultimately improving patient survival rates. Regular refresher sessions are recommended to maintain and reinforce these life-saving competencies over time.

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