The validation of a smart CPR training module: The preliminary process of a technology-based CPR training approach

ABSTRACT

Introduction: In contemporary healthcare education, the integration of technology has emerged as an essential factor in enhancing the efficiency and efficacy of training methodologies. Particularly within the domain of cardiopulmonary resuscitation (CPR) training, the adoption of technology-driven approaches holds considerable potential for enriching the skills and proficiencies of healthcare practitioners. Through the utilization of innovative technologies, such as simulation software and leveraging smartphones as primary tools, CPR training programs can be customized to provide immersive, interactive, and authentic learning experiences. This study aims to validate a comprehensive CPR training module tailored explicitly for healthcare professionals, to integrate it into smartphones as a medium for delivering CPR training. Methods: Two validity tests, namely content validity and face validity were conducted to evaluate the validity of the Smart-CPR training module. A selfconstructed measurement scale was utilized to assess four parameters: consistency, representativeness, clarity, and relevancy. Content validity employed the content validity ratio, with scores ranging between 1 and −1, indicating the level of consensus among experts regarding the significance of each item. Face validity was assessed using two indices: the item face validity index and the scale face validity index. Ratings of 3 or 4 were given a score of 1, while ratings of 1 or 2 received a score of 0. Result: The content validity shows that CVI values for 'consistency' and 'representativeness'were 0.99 for the module and questionnaire, and 0.96 and 0.97, respectively. 'Clarity' scored 0.99 for the module and 0.96 for the questionnaire, while 'relevance' achieved 0.99 for both. All 44 items exceeded the 0.83 threshold for face validity. The Lawshe's content validity ratio (CVR) and content validity index (CVI) value were used to evaluate the content validity of both the CRSTP module and questionnaire, with CVR values result ranging from 0.80 to 0.99 across dimensions. These findings demonstrate robust content validity. Additionally, high CVI scores, mostly exceeding 0.95, suggest favorable outcomes and indicate no need for revisions. In face validity method, all 44 items surpassed the minimum threshold of 0.83, signifying a favourable outcome. Thus, all items were deemed acceptable. Conclusion: The Smart-CPR training module and questionnaires were meticulously developed to meet both face and content validity standards. All 44 items demonstrated appropriate levels of validity, ensuring they effectively enhance and maintain CPR competency among healthcare providers and potentially benefit the broader community. The positive results of the Smart-

CPR training module confirm the high validity of the CPR competency assessment. Content validity, evaluated by experts, received a perfect score, demonstrating agreement on the relevance of each module component. Similarly, face validity, assessed by healthcare professionals, also received a flawless score, indicating consensus on the module's clarity and relevance. These findings validate the module's effectiveness in teaching CPR techniques to a diverse audience and ensuring compliance with established standards. With such strong validity, digitizing the module becomes more straightforward, facilitating easier sharing and use across digital platforms. Ultimately, the module's high validity facilitates its integration into digital platforms, thereby enhancing CPR education and improving outcomes during real emergencies.