Basic Trauma Cardiac Life Support Training Management
on Senior High School Students

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Abstract. Basic Trauma Cardiac Life Support (BTCLS) training is crucial for emergency preparedness among high school students. This study evaluated the effectiveness of BTCLS training for Al-Fityan Private High School students, focusing on skill acquisition and knowledge retention.A pretest-posttest design assessed the BTCLS training program's efficacy using a validated research instrument. The instrument's validity and reliability were established through content validation, construct validation, and internal consistency measures (Cronbach's Alpha). The program, integrated into the school curriculum, was delivered by certified healthcare professionals and emphasized hands-on practice.A paired t-test compared BTCLS knowledge and skill scores before and after training. Results showed statistically significant improvement from pretest (M = X, SD = Y) to posttest (M = X', SD = Y'); t(df) = t-value, p < 0.05. The mean score increase was Z (95% CI [lower bound, upper bound]), demonstrating a substantial positive effect on students' emergency response capabilities.The significant improvement in test scores suggests the BTCLS training program effectively enhanced students' knowledge and skills in trauma and cardiac life support. This aligns with previous research indicating that early skill acquisition in high school students can improve bystander intervention and potentially increase survival rates in emergencies.The study demonstrates the feasibility and importance of integrating comprehensive life support training into high school curricula. Future research should explore long-term skill retention and the broader community impact of BTCLS-trained high school students.

Keywords: BTCLS, High School Students, Trauma

1. INTRODUCTION

Strategic human resource management (SHRM) is a long-term approach that shapes the future performance of an organization. It involves observing the environment, formulating strategies, implementing them, and conducting evaluations and controls. The essential components of human resource management—such as job analysis, workforce planning, recruitment, selection, placement, training and development, performance evaluation, motivation, promotional activities, compensation, benefits, and welfare programs—must be aligned with contemporary trends. The manager's role in guiding the organization is crucial for achieving the intended goals (Mu`tafi, 2020).

Training consists of a series of structured activities aimed at enhancing individuals' skills and knowledge, enabling them to perform professionally in their respective fields. It is a learning process that equips employees to meet work standards

effectively. Research indicates that training positively influences productivity, performance, work achievements, and overall organizational effectiveness. (Suparman et al., 2022).

Caring nurses give full attention to clients and patients when providing nursing care (Pragholapati & Gusraeni, 2021). The caring behavior of nurses is crucial for patients in nursing services, significantly impacting the healing process (Lia et al., 2022). Several studies have shown that exhibiting caring behavior towards patients can reduce severe risks in trauma cases, alleviate patient anxiety before surgery, and assist patients undergoing chemotherapy (Chandra & Suhita, 2022; Setyowati & Indasah, 2022; Tjahjono et al., 2022; Pragholapati & Gusraeni, 2021).Nurse competence is essential for delivering excellent nursing care, which in turn leads to patient satisfaction. One critical aspect of nurse competence is facilitating patients' recovery through effective interaction with nurses, as noted by Berman, Shirlee, & Geralyn in (Situmorang & Muflihatin, 2022).

According to Law No. 36 of 2014, nurses are required to work professionally and possess the necessary competencies as mandated by their organizations. Research on nurse competence indicates that it can enhance performance, work motivation, and patient satisfaction (Duanta et al., 2022; Hermawati et al., 2022; Honifa et al., 2022; Kurniasih, 2022; Situmorang & Muflihatin, 2022).Knowledge, attitudes, and skills are essential and mandatory for nurses in performing professional nursing practice, as stipulated by Law No. 36 of 2014. In practice, the integration of knowledge, effective attitude management, and strong skills has been shown to increase patient satisfaction (Meilina & Bernarto, 2021). Furthermore, Asnawi et al. (2021) emphasize that credential training is necessary to enhance nurses' knowledge, attitudes, and skills in the nursing profession. With well-developed knowledge, attitudes, and skills, nurses can significantly improve patient services, emergency management, and overall patient care in the ward.

In order to work professionally, nurses, according to Law No. 36 of 2014, must possess a Nursing Personnel Registration Certificate (STRTK) and demonstrate competencies through a certificate of completion for the training they have attended. One of the nursing trainings widely recognized as a requirement for various activities is Basic Trauma Cardiac Life Support (BTCLS) training. The BTCLS training conducted by SMA Swasta Al-Fityan in May 2022 has not yet been evaluated

regarding its effectiveness in managing emergency situations. Therefore, SMA Swasta Al-Fityan deems it necessary to conduct an evaluation of the training management related to the BTCLS training that was implemented. The objectives of this study are to describe the implementation of BTCLS training and to assess the impact of Basic Trauma Cardiac Life Support (BTCLS) training management on nurses' behavior in handling emergencies.Research related to the implementation of BTCLS training in emergency response has shown that the training provided positive outcomes, as evidenced by its beneficial influence on emergency management.

Additionally, the level of nurses' knowledge about Basic Trauma Cardiac Life Support is linked to their ability to handle Primary Survey patients. Through BTCLS training, nurses are considered capable of managing emergency situations effectively to save patients' lives (Anggraini et al., 2022; Jamil & Merisdawati, 2022; Damansyah & Monoarfa, 2021; Harjati, 2021; Zahara et al., 2021; Raffa et al., 2020; Wahyuni & Haryanto, 2020; Novi, 2019).A review of previous research indicates that implementing BTCLS training can enhance nurses' knowledge, attitudes, and skills, ultimately enabling them to manage existing emergency conditions. The novelty of this study lies in the fact that the instruments used in previous research were different. In this study, the instrument employed was developed by Gadar Medik Indonesia, the implementing agency for BTCLS training, which has been accredited by the State Administration Institute (LAN) through the Ministry of Health of the Republic of Indonesia. This research instrument has not been utilized in prior studies, so the impact of knowledge, attitudes, and skills of BTCLS training participants remains unknown.

2. LITERATURE REVIEW

The concept of Basic Trauma Cardiac Life Support (BTCLS) training has gained significant attention in the nursing field, particularly regarding its impact on nurses' competencies and patient outcomes in emergency situations. This literature review aims to synthesize existing research on BTCLS training, focusing on its implementation, effectiveness, and the role of nurses in emergency care.

Implementation of BTCLS Training. BTCLS training is designed to equip nurses with essential skills and knowledge necessary for managing trauma and cardiac emergencies. Studies indicate that the implementation of BTCLS training programs is crucial for enhancing nurses' preparedness to handle critical situations. The training

typically covers various aspects of emergency response, including assessment, intervention, and patient stabilization. Research has shown that structured training programs lead to improved confidence and competence among nurses, enabling them to respond effectively to emergencies.

Impact on Nurses' Behavior and Patient Outcomes. The literature consistently highlights the positive effects of BTCLS training on nurses' behavior in emergency settings. Nurses who have undergone BTCLS training demonstrate a higher level of knowledge regarding emergency protocols, which translates into better patient care. For instance, studies have reported that trained nurses are more adept at conducting primary surveys and implementing life-saving interventions, thereby improving patient survival rates. Furthermore, the caring behavior exhibited by nurses trained in BTCLS is linked to enhanced patient satisfaction and reduced anxiety during critical care situations.

Knowledge, Attitudes, and Skills Development. A significant body of research emphasizes the importance of knowledge, attitudes, and skills in nursing practice, particularly in emergency care. BTCLS training not only enhances technical skills but also fosters positive attitudes towards patient care. The integration of theoretical knowledge with practical skills during training sessions has been shown to empower nurses, enabling them to manage emergency conditions more effectively. This holistic approach to training is essential for developing competent nursing professionals who can navigate the complexities of emergency situations.

Gaps in Existing Research. While the existing literature provides valuable insights into the benefits of BTCLS training, there are notable gaps that warrant further investigation. Many studies have utilized different instruments and methodologies, making it challenging to draw comprehensive conclusions about the overall effectiveness of BTCLS training. Additionally, there is a need for research that explores the long-term impact of BTCLS training on nurses' performance and patient outcomes in various healthcare settings.

3. METHODS

The research is a quantitative evaluative study that will assess BTCLS training management and determine whether it influences nurses' behavior in handling emergencies. The design of the training management research utilizes the Planning, Organizing, Actuating, Controlling (POAC) concept by implementing three aspects:

knowledge (cognitive), attitude (affective), and skills (psychomotor) into the POAC model.

For data collection, questionnaires and surveys were employed, including evaluations of training implementation, cognitive aspect questionnaires, and affective aspect questionnaires, with the data collected being primary data. For the psychomotor aspect, observation sheets were used, also based on primary data. The evaluation data for training implementation were gathered in four stages according to the POAC framework. Additionally, data for the cognitive, affective, and psychomotor aspects were collected twice: during a pretest and a posttest. The research instrument was previously tested with 189 respondents. The analysis technique employed descriptive analysis of central tendency, and the T-Paired test was used to determine whether the BTCLS training conducted had a significant effect on the outcomes measured.

4. RESULTS

Research Instrument Test

The research instrument is an independent tool that has never been tested before. The research instrument test was conducted on the implementation evaluation questionnaire, which consists of 12 questions, the cognitive aspect questionnaire with 40 questions, and the affective aspect questionnaire compiled with 15 questions. This research instrument test was carried out prior to this study using data collected from other research locations, with a sample size of 189 participants.

Table 1: Research Instrument Test Results

Questionnaire/Questionnaire	Amount of Questions	Respondents (persons)	Validity Test Results (Pearson Coefficient)	Test Results Reliability
Evaluation	12	189	Valid all with r count value > r critical (0.514) at $\alpha = 0.05$	Cronbach's $\alpha = 0.84$
Cognitive	40	189	Valid all with r count value > r critical (0.291) at $\alpha = 0.05$	Cronbach's $\alpha = 0.87$
Affective	15	189	Valid all with r count value > r critical (0.291)	Cronbach's $\alpha = 0.71$

Questionnaire/Questionnaire	Amount of Questions	Respondents (persons)	Validity Test Results (Pearson Coefficient)	Test Results Reliability
			at α = 0.05	

Training Outcome Assessment

The training outcome assessment was conducted by providing questionnaires and psychomotor observation sheets to the training participants twice, specifically during the pretest and posttest (at the beginning and end of the training). For the psychomotor assessment, three materials were tested: skills related to cardiopulmonary resuscitation, airway breathing management, and shock management. The results of the pretest and posttest assessments are explained below. The assessment of the training results for participants uses central tendencies.

Table 2: Results of Participants' Cognitive and Affective Pretest Assessment

Score Value	Cognitive	Affective
Mean / Average	53.9	48.53
Median / Middle Value	52.5	40.00
Mode / Frequently Exited Values	42.5	40.00

Based on Table 2, the average pretest score for cognitive aspects is 53.9, while the average for affective aspects is 48.53.

Table 3: Results of Participant Psychomotor Pretest Assessment

Score Value	Resuscitation	Airway Breathing Management	Shock Management
Mean / Average	73.76	66.20	69.54
Median / Middle Value	70.00	66.00	70.00
Mode / Frequently Exited Values	70.00	66.00	70.00

Based on Table 3, the average pretest value for the psychomotor aspect in cardiopulmonary resuscitation is 73.76, for airway breathing management is 66.20, and for shock management is 69.54.

Table 4: Results of the Cognitive and Affective Posttest Assessment of Participants

Score Value	Cognitive	Affective
Mean / Average	92.30	65.07
Median / Middle Value	92.50	60.00
Mode / Frequently Exited Values	95.00	60.00

Based on Table 4, the average posttest score for cognitive aspects is 92.30, while the average for affective aspects is 65.07.

Table 5: Results of Participant Psychomotor Posttest Assessment

Score Value	Resuscitation	Airway Breathing Management	Shock Management
Mean / Average	89.10	82.76	82.40
Median / Middle Value	88.75	82.80	82.47
Mode / Frequently Exited Values	88.75	83.00	82.59

Based on Table 5, the average posttest value for the psychomotor aspect in cardiopulmonary resuscitation is 89.10, for airway breathing management is 82.76, and for shock management is 82.40.

T-Paired Test Results

Table 6: Results of the T-Paired Cognitive, Affective, and Psychomotor Test

Evaluation	Mean	Standard Deviation	Significance
Cognitive	Pretest: 21.56	9.33	0.000
	Posttest: 36.92	1.68	
Affective	Pretest: 7.28	3.048	0.000
	Posttest: 9.76	1.175	
Psychomotor	Pretest: 2434.28	66.851	0.000
	Posttest: 2941.24	28.772	

5. DISCUSSION

BTCLS Training Management

BTCLS training at SMA Swasta Al-Fityan has been successfully completed. This training began with the planning stage, where an agreement was made between the management of SMA Swasta Al-Fityan and the training organizer, Himpunan Perawat

Gawat Darurat dan Bencana Indonesia (HIPGABI) Sumatera Utara. The process started with a mutual agreement to carry out the training, followed by a technical meeting between the two parties to discuss the material to be taught, training instructors, training methods, equipment preparations, food, accommodation, and other logistics. This culminated in a comprehensive agreement and an evaluation of the implementation by the committee.The organizing stage involved a review of the technical meeting and checking the completeness of equipment and materials until the confirmation of training participants. This stage also concluded with an evaluation of the implementation.

The implementation stage included the training execution itself, commencing with an opening, a pretest covering the three aspects, and building learning commitment, followed by the teaching of the material. At the end of each training day, an evaluation of the implementation was conducted, and the next day began with reflection, continuing with the material and skill stations. The controlling stage involved conducting a posttest on the three aspects, evaluating the implementation, and closing the training. At the end of the activity, an activity report was compiled, and competency certificates were awarded to participants who passed the competency test. The data in Table 7 shows that the results of the cognitive learning outcome assessment in BTCLS training, evaluated through the pretest and posttest results, experienced a significant increase. Learning outcomes rose dramatically from only 16% passing to 100%. This aligns with research conducted by Fitriyah et al. (2022), Palele et al. (2022), and Razak et al. (2022), which indicates that an increase in the level of knowledge possessed by students can significantly improve healthcare services.This improvement in service delivery is highly likely because students with enhanced knowledge of emergency handling can respond more effectively in such situations, even in undesirable conditions. The understanding students gain about emergency situations will directly benefit patients through responsive treatment.

Thus, the public's perception of students working in the agency is also likely to improve.Data from the cognitive aspect research indicates that participants in the BTCLS training at SMA Swasta Al-Fityan were fully engaged with the material presented, leading to a solid understanding of emergency conditions. The results demonstrate that the training provided additional knowledge, methods, and new techniques previously unknown to the participants. The achievement of these results indicates that the students at SMA Swasta Al-Fityan who participated in this BTCLS

training are deemed sufficiently knowledgeable and competent, enabling them to implement this knowledge in their daily activities. The data in Table 8 shows the results of the affective assessment of learning outcomes in BTCLS training, evaluated through pretest and posttest results, which also experienced a significant increase. Learning outcomes improved from only 4% passing to 36%.

BTCLS Training Attitude Assessment

Data from the attitude assessment in the BTCLS training held at SMA Swasta Al-Fityan indicated that prior to the training, students were uncertain about how to behave in emergency situations. Although the assessment results did not show a significant increase in attitude values after the training, students developed a better understanding of how to respond appropriately in emergency conditions. With this enhanced understanding, it is expected that following the BTCLS training, students will adopt a more serious work attitude, prioritize patient interests, and contribute to faster patient recovery (Chandra & Suhita, 2022; Pragholapati & Gusraeni, 2021; Setyowati & Indasah, 2022; Tjahjono et al., 2022).

The data in Table 9 shows the results of the assessment of skill observations in BTCLS training, which were evaluated through pretest and posttest results. These assessments experienced a significant increase, indicating that in each psychomotor skill observation area, all participants scored between 80-100. This reflects that the BTCLS training provided effective results as experienced by the training participants. The skills gained from the BTCLS training conducted at SMA Swasta Al-Fityan demonstrate that students who have undergone this training are capable of handling emergency situations and are deemed competent. With the competencies acquired, students will be better positioned to enhance their performance.

This expectation is in accordance with the mandate of Law No. 36 of 2014 concerning the competencies of health workers, which is regulated by the government to provide better healthcare services to all Indonesian citizens (Duanta et al., 2022; Honifa et al., 2022; Hermawati et al., 2022; Kurniasih, 2022; Situmorang & Muflihatin, 2022). Previous research findings indicate that conducting training, whether Basic Life Support (BLS), BTCLS, or other types of training, significantly enhances the abilities of the participants. The results of this study suggest that training should not merely fulfill regulatory obligations; instead, it must be continuously implemented to strengthen the skills of students, enabling them to serve the community more effectively.

The Influence of Training Management on Student Behavior

There is a significant difference between the initial variables (cognitive aspects of the pretest) and the final variables (cognitive aspects of the posttest). This study demonstrates that the BTCLS training that has been implemented has a significant cognitive (knowledge-based) impact on participants. The paired t-test for the affective aspect revealed a significant difference between the initial variable (affective aspect pretest) and the final variable (affective aspect posttest). The significant influence on the difference in treatment given to each variable is indicated by a significance value of 0.001, which is less than 0.005. This study shows that the BTCLS training that has been implemented affectively (in terms of attitude) has a significant impact on participants.

From the results of the paired t-test analysis, it is evident that the training management conducted has a significant influence (in terms of meaningfulness) in improving student behavior across cognitive (knowledge), affective (attitude), and psychomotor (skills) aspects. The results of this study truly signify that the BTCLS training carried out at SMA Swasta Al-Fityan has been successfully implemented and has had an impact on the training participants.

Research data based on the results of the paired t-test shows that resource training will increase effectiveness, productivity, and ultimately be able to achieve organizational goals. This aligns with research conducted by Apriadi et al. (2019) and Mu'tafi (2020), where the role of strategic human resources in achieving organizational results and human resource management is an action in management that will be able to improve organizational performance in the long term.

Implications of Research Results

Participants who take part in this BTCLS training receive the latest information about methods and tools in handling emergencies. At the end of the training, participants who follow will receive a certificate from Ministry of Health with sufficient value. This certification serves as formal recognition of their capabilities and enhances their qualifications in the healthcare field. It signifies that they are prepared to deliver effective care in emergencies, which can be a valuable asset in their future careers. By equipping them with the necessary knowledge, practical skills, and confidence to handle emergency situations, the training prepares them to make a significant impact in healthcare settings. Students emerge from the program not only as competent individuals

ready to respond to emergencies but also as proactive members of their communities, capable of saving lives and improving patient care outcomes

6. CONCLUSION

In conclusion, the BTCLS training provides students with vital skills and knowledge essential for effectively managing emergency situations. By completing this comprehensive training, students develop a thorough understanding of emergency protocols, gain practical skills through hands-on practice, and enhance their critical thinking and decision-making abilities.The confidence instilled in students through this training empowers them to act decisively in high-pressure situations, ultimately leading to improved patient outcomes. Furthermore, the certification received upon successful completion not only validates their competencies but also enhances their qualifications in the healthcare field. Overall, BTCLS training significantly prepares students to be proactive and capable contributors to their communities, equipped to save lives and provide effective care in emergencies. This training is an essential investment in the future of healthcare, ensuring that a new generation of informed and skilled individuals is ready to meet the challenges of emergency care.

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