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Development of the Hypovolemic Shock Response Kit (Emergency Kit Containing Infusion Fluids and Pressure Dressing Equipment) at SMK Bina Banua Banjarmasin

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A B S T R A C T

Hypovolemic shock is a medical emergency condition that can be life-threatening due to significant loss of fluids or blood, leading to tissue hypoperfusion and organ failure. In Indonesia, the incidence of hypovolemic shock, particularly from trauma, dehydration, and bleeding, remains high. Therefore, prompt and appropriate intervention is crucial, especially among school students. This article aims to develop and introduce the Hypovolemic Shock Response Kit (an emergency kit containing infusion fluids and pressure dressing equipment) at SMK Bina Banua Banjarmasin through a community service activity. The method used is a participatory educational approach, including counseling, demonstrations, and simulation practices. The pre-test results indicated that students' knowledge of hypovolemic shock was 81.2%, which significantly increased to 96.15% after the training. Students' skills in recognizing signs and providing first aid also improved significantly. Thus, this program successfully equipped students with the knowledge and skills to handle medical emergencies, while fostering an emergency response culture within the school environment. It is hoped that similar programs can be implemented in other schools to enhance public readiness for medical emergencies.

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1. Introduction

Hypovolemic shock is a life-threatening medical emergency resulting from significant fluid or blood loss. The loss of intravascular volume leads to tissue hypoperfusion, hypoxia, and, if not promptly treated, may result in multiorgan failure or death. WHO global data shows that hypovolemia due to hemorrhage, severe dehydration, or trauma is a leading cause of high mortality rates, particularly in developing countries.

In Indonesia, diarrhea, dehydration, trauma, and hemorrhage remain the dominant causes of hypovolemic shock in both children and adults. The 2020 Riskesdas (Basic Health Research) reported an injury incidence rate of 9.2%, an increase from 8.2% in 2016. Additionally, South Kalimantan reported 62,000 cases of dehydration due to diarrhea in children, with a 11.7% infant mortality rate due to dehydration and hypovolemic shock complications. This highlights the urgent need for timely and appropriate interventions in the community, including within school environments.

However, public knowledge, especially among students, regarding early signs and first aid for hypovolemic shock remains limited. A lack of skills in using basic equipment such as infusion and pressure dressing can worsen the victim's condition during emergencies. Therefore, there is a need for practical education and training through the introduction of the Hypovolemic Shock Response Kit – an emergency kit containing infusion fluids and bleeding control equipment.

This community service activity aims to improve the knowledge, skills, and preparedness of SMK Bina Banua Banjarmasin students in responding to hypovolemic shock. By using interactive education and practical simulation approaches, it is hoped that students will play an active role in providing first aid and fostering an emergency response culture within the school environment.

2. Implementation Method

The method of implementing this community service activity uses a participatory educational approach, involving students actively through a combination of counseling, demonstrations, and simulation practices. This approach was chosen because it aligns with the principles of health education, which emphasize behavior change through knowledge, skill, and attitude improvement (Notoatmodjo, 2012). Simulation-based education has also been proven effective in enhancing emergency management skills among students (Gardner Yelton et al., 2022).

The activity begins with a situational analysis to assess the students' initial knowledge level about hypovolemic shock. A pre-test is then conducted to measure the participants' basic understanding. The next step involves delivering education through interactive lectures, discussions, and the use of media such as posters and PowerPoint presentations. The material covers the definition of hypovolemic shock, its causes, signs, symptoms, and initial treatment steps using the Hypovolemic Shock Response Kit.

Afterward, a demonstration is held by the implementation team on how to use the equipment in the emergency kit, such as infusion fluids and pressure dressing. Participants then engage in group simulations to strengthen their skills. After the training, a post-test is administered to evaluate the improvement in knowledge and skills.

The reason for using this method is to provide students with a comprehensive learning experience, from theoretical knowledge to practical application, thereby fostering preparedness in handling medical emergencies. This approach is in line with adult learning theory, which suggests that hands-on experience and active participant engagement enhance knowledge retention and skill acquisition (Kolb, 1984).

The stages of the activity implementation include:

1. Preparation: Coordination with the school, material preparation, and the development of pre-test and post-test instruments.
2. Implementation: Pre-test, counseling, demonstration, simulation practice, discussions, and post-test.
3. Evaluation: Analysis of pre-test and post-test results to assess the effectiveness of the activity, followed by the preparation of reports and publications as activity outcomes.

3. Results and Discussion

The pre-test results showed an average knowledge score of 81.2%, indicating that some students had a basic understanding of hypovolemic shock. After receiving education, demonstrations, and simulation practices using the Hypovolemic Shock Response Kit, the post-test results significantly

improved with an average score of 96.15%. This demonstrates an increase in students' knowledge and skills in recognizing symptoms and providing first aid for hypovolemic shock.

Additionally, observations during the activity showed a change in students' attitudes, with increased engagement, active questioning, enthusiasm during practice, and the ability to effectively demonstrate the steps for using the equipment.

Table 1. Pre-test and Post-test Results

No	Target	Pre-Test (100%)	Post-Test (100%)	Target Status
1	SMK Bina Banua Students	81.2%	96.15%	Achieved

The increase in average scores from the pre-test to the post-test indicates that the interactive educational method, combined with demonstrations and simulation practices, effectively enhanced students' knowledge and skills. These findings align with the health education theory by Notoatmodjo (2012), which states that knowledge can increase significantly when learning is conducted using participatory methods.

Moreover, this activity's results are consistent with research by Gardner Yelton et al. (2022), which emphasizes that simulations in health education improve clinical skills and readiness for emergency situations. Through hands-on practice, students not only understood the theoretical concepts but were also able to apply the correct steps in managing hypovolemic shock.

The achievement of the activity's goals is reflected in the students' improved ability to use the Hypovolemic Shock Response Kit and their enhanced understanding of hypovolemic shock. This contributes to the development of an emergency response culture within the school environment. Furthermore, this activity has the potential to be replicated in other schools to strengthen community preparedness for medical emergencies.

4. Conclusion

The community service activity focused on education and simulation of the use of the Hypovolemic Shock Response Kit at SMK Bina Banua Banjarmasin successfully enhanced students' knowledge and skills in providing initial treatment for hypovolemic shock. This was evidenced by a significant improvement in the average post-test score compared to the pre-test, as well as a change in students' attitudes, with more active participation and enthusiasm during the activity. The goal of equipping students with basic understanding and skills regarding hypovolemic shock was achieved effectively. Through interactive education and simulation practices, students became more prepared to face medical emergencies and are now capable of contributing to building an emergency response culture within the school environment. It is recommended that this program be conducted on an ongoing basis, involving more schools and community groups. Additionally, there is a need to develop more varied educational media and provide follow-up training to ensure that the skills gained are maintained and further enhanced. By doing so, this initiative can have a broader impact on improving community preparedness for medical emergencies.

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