Journal of Community Engagement in Health
https://jceh.org/ https://doi.org/10.30994/jceh.v8i1.716
ISSN: 2620-3758 (print); 2620-3766 (online) Vol. 8 No 1. March 2025. Page. 58 - 64

Training in Water Emergency First Aid using a Simulation Method to Improve the Knowledge of Pokdarwis Sumber Complang, Pranggang Village

Alfian Fawzi*, Hengky Irawan, Dimas Yuana Putra, Dias Andrika, Intan Meliasari, Brigita Putri Febrianti, Putri Devita Sari, Aprilia Nuril Hidayanti, Else Auvi Dalilah, Berlyta Eka Divany, Nova Rellyta, Nurohmah
Universitas STRADA Indonesia
Corresponding author: alfiansensei727@gmail.com

ABSTRACT
Knowledge of first aid for drowning victims among communities near water attractions is essential to improve the success of assistance, especially for tourism awareness groups (Pokdarwis). Proper first aid knowledge is necessary to the reduce mortality and morbidity of accident victims, as the level of knowledge will affect the handling techniques for accident victims before they are taken to the hospital. However, currently, very little education is provided to the community as first responders at the scene. Therefore, the PPK ORMAWA BEM STRADA INDONESIA team conducted training on first aid for drowning victims for Pokdarwis and the community around Sumber Complang, Pranggang Village, to increase awareness and success when assistting. This activity aims to determine the relationship between increased knowledge of Pranggang Village Pokdarwis and helping drowning victims using the simulation method. The results obtained show a p-value of 0.004. Since 0.004 is less than < 0.05, it can be concluded that there is a difference in respondents' abilities before and after training. An effective simulation method can easily teach someone to understand new knowledge. These results indicate that the simulation method is very effective in training lay people to perform first aid for drowning victims.

Keywords: Knowledge, Pranggang Village, Simulation Method, Sumber Complang Tourism, Water Emergency First Aid

Received: January 8, 2025
Revised: February 11, 2025
Accepted: March 28, 2025

INTRODUCTION
Water tourism is one of the most frequently visited destinations by the surrounding community. Tourism serves as a key driver of a region's economy. One of the main attractions in Pranggang Village is the Sumber Complang tourist site. Visitors, both from outside the city and locals, often visit Sumber Complang because it offers refreshing and beautiful water scenery. However, behind this beauty lies the ever-present danger of drowning, which can happen to children, teenagers, or adults at any time. Generally, drowning is an accident that occurs in

water, either consciously while swimming or indirectly due to incidents such as falling into water accidentally or being under the influence of alcohol or drugs (Wirmando et al., 2023).
Local knowledge of a water area plays a crucial role in managing drowning incidents. The local community and personnel responsible for the area generally have a deeper understanding of the characteristics of the aquatic environment, such as currents, depth, accident-prone points, and weather factors that may affect safety (Franklin et al., 2020) With this understanding, rescue actions can be carried out more quickly and effectively, thereby increasing the chances of survival for drowning victims. Additionally, local knowledge enables authorities to implement appropriate preventive strategies, such as installing warning signs in high-risk locations and providing safety equipment at strategic points (Franklin et al., 2020).
According to the World Health Organization (WHO) in 2016, there are 322,000 deaths caused by drowning worldwide annually. Ninety percent of these fatalities occur in low-income or developing countries. The highest mortality rates are found in Southeast Asia, Africa, and the Western Pacific regions. In Indonesia, WHO reported a drowning rate of 3.3 per 100,000 people in 2016. Given Indonesia's geographical conditions, with 70% of its territory consisting of water, drowning incidents are highly likely. Moreover, many water bodies in Indonesia serve as popular tourist destinations (Faradisi, Aktifah, & Kartikasari, 2021). Drowning is defined as an injury caused by submersion or immersion in water that can result in death within less than 24 hours. Most drowning cases occur in areas where the majority of professions involve working on water. (Fibriansari et al., 2022).
One major factor contributing to the high mortality rate from drowning is inadequate knowledge and improper first aid measures. Often, communities lack proper systems and knowledge for handling emergencies effectively at the scene. Suhari et al. (Al-Fa'izah et al., 2017) emphasized that providing immediate first aid is crucial to reducing the likelihood of severe disability or death. Initial actions at the scene include rescuing victims from the water, providing breathing assistance, performing chest compressions, clearing vomit to prevent airway obstruction, preventing hypothermia, and transporting victims to emergency facilities for evaluation and monitoring (Zurimi et al., 2021).
Quick and accurate first aid at tourist sites can reduce mortality and morbidity rates; hence tourism awareness groups (Pokdarwis) and the surrounding community must have adequate knowledge and skills for administering first aid before referring victims to a hospital. The level of knowledge significantly influences how accident victims are handled. Proper first-aid knowledge increases the chances of saving lives and reducing severe injuries. (Jarvis et al., 2021).
Based on this context, understanding first aid for accidents is essential. Therefore, the PPK Ormawa team conducted community service aimed at providing training on first aid for drowning victims to tourism managers and residents near Sumber Complang tourist site in Pranggang Village, Kediri Regency. The training utilized simulation methods to enhance participants' understanding and skills.

METHODS

This community service activity utilized an educational approach through simulation methods. In response to the challenges faced in improving the knowledge and skills of tourism managers in providing appropriate first aid for drowning victims, the PPK Ormawa BEM STRADA team proposed a solution by conducting training sessions on first aid for drowning victims using simulation methods. The target audience included members of the Tourism Awareness Group (Pokdarwis) and the community around the Sumber Complang tourist site in Pranggang Village, Kediri Regency. The activity was conducted with the assistance of certified First Aid

trainers from the Indonesian Red Cross (PMI), ensuring safety by using adequate equipment such as life vests, ring buoys, and inflatable boats.
The pre-test was conducted using a questionnaire form filled out by participants during registration. The pre-test questions were designed in simple language suitable for the general public and consisted of 10 questions. Correct answers were scored as 1, while incorrect answers were scored as 0. The questions focused on first aid for drowning victims. The results of this pre-test were used to assess participants' initial understanding before receiving the simulation-based training.
He training content was tailored to meet the information needs of the participants and included the following topics: Techniques for seeking help upon witnessing a drowning victim, Planning before providing assistance, Preparing equipment to assist drowning victims, Swimming techniques for rescuing drowning victims, Steps for handling victims experiencing respiratory arrest or cardiac arrest, including cardiopulmonary resuscitation (CPR) techniques.
The material was presented in the form of leaflets and simulations conducted by trainers and the PPK Ormawa BEM STRADA team. The simulation involved a scenario where a tourist was drowning, allowing participants to practice real-life responses.
The material was presented in the form of leaflets and simulations conducted by the presenters and the PPK Ormawa BEM STRADA team. The simulation involved a scenario where a tourist was drowning, allowing participants to practice real-life responses. The material provided was sourced from experts in the field, namely Hengky Irawan, S.Pd., S.Kep., Ns.M.Kep., who is a First Aid Trainer for PMI (Indonesian Red Cross), a trainer for Smart Emergency Indonesia, and holds BNSP certification. The questionnaire has undergone a validity test with an r-value >0.684, consisting of 10 questions, and a Cronbach's alpha value of 0.89.
A post-test questionnaire was distributed after the simulation ended. The post-test questions were designed in simple language suitable for the general public and consisted of 10 questions. Correct answers were scored as 1, while incorrect answers were scored as 0. The questions focused on first aid for drowning victims. The results of this post-test were used to measure respondents' understanding after receiving simulation-based education on first aid for drowning victims.
The simulation-based education was carried out by the presenters and the PPK Ormawa BEM STRADA INDONESIA team. The steps included:

1. Preparing scenarios and teams to conduct the simulation.
2. Preparing educational tools such as life vests and inflatable boats.
3. Setting up a suitable location for the training.
4. Preparing materials in the form of leaflets and simulation scenarios.
5. Conducting simulations of first aid for drowning victims.
6. Supervising and guiding Pokdarwis members in practicing first aid techniques for drowning victims.

RESULTS

Respondents enthusiastically participated in the drowning first aid training using the simulation method. This activity lasted approximately 160 minutes, divided into three stages: the first stage, a pre-event consisting of the initial 30 minutes for registration and completion of the pre-test questionnaire; followed by the core event, 30 minutes of presenting material on first aid for drowning victims, and then 40 minutes of simulating first aid cases for drowning victims; 30 minutes of small group mentoring to train participants in practicing first aid for drowning victims and Cardiopulmonary Resuscitation (CPR) techniques; and finally, 30 minutes for

conducting the post-test and distributing refreshments to the respondents. The following is demographic characteristic data on the 14 respondents, consisting of gender, age, and latest education.

Table 1. Demographic distribution of community service respondents on drowning first aid for pokdarwis and the surrounding community using the simulation method

Characteristic	Category	Number of respondents	Percentage
Gender	Male	10	71,4%
	Female	4	28,6%
Age	<30	4	28,6%
	31-40	4	28,6%
	>40	6	42,8%
Education	Elementary School	1	7,2 %
	Junior High School	2	14,3 %
	Senior High School	11	78,5 %

From Table 1, the distribution of demographic data of respondents is as follows: almost all are male, most are over 40 years old, and almost all have a Senior High School as their highest level of education.

Table 2. Level of knowledge of respondents before receiving drowning emergency first aid training with the simulation method for pokdarwis and the surrounding community

Knowledge level	Number of respondents	
	Pre	Prosentase (%)
Lacking knowledge	9	64,3%
Sufficient knowledge	2	14,3%
Good knowledge	3	21,4%
Total	14	100%

From Table 2, it can be seen that before receiving Drowning Emergency First Aid Training with the Simulation Method, 9 (64.3%) of the respondents lacked knowledge about drowning emergency first aid, and only 3 (21.5%) had good knowledge about drowning emergency first aid.

Table 3. Level of knowledge of respondents after receiving drowning emergency first aid training with the simulation method for pokdarwis and the surrounding community

Knowledge level	Number of respondents	
	Post	Prosentase (%)
Lacking knowledge	1	7,1%
Sufficient knowledge	0	0%
Good knowledge	13	92,9%
Total	14	100%

From Table 3, it can be seen that after receiving Drowning Emergency First Aid Training with the Simulation Method, only 1 (7.1%) respondent lacked knowledge, and 13 (92.9%) had good knowledge about drowning emergency first aid.

Table 4. Statistical test using the wilcoxon test

Test	Value
p-value	0.004

From the results of Table 4, it can be seen that the p-value is 0.004. Since 0.004 is less than < 0.05, it can be concluded that there is a difference in the abilities of respondents from before the training and after the training. The improvement in respondents' ability to perform drowning emergency first aid was based on training carried out using the simulation method. This is because there are audiovisuals that can help improve respondents' memory, and this method is very interactive, involving participants to actively engage in direct demonstrations. Participants were also given the opportunity to discuss directly during the simulation process, so that participants' lack of knowledge was immediately answered during the interaction process.

DISCUSSION

The simulation included the process of requesting help upon witnessing a drowning victim, contacting the nearest health service, asking others to help the victim, searching for floating objects that could be used to assist the victim, swimming with a plan for those who can swim, teaching techniques for helping victims in the water, and performing cardiopulmonary resuscitation with hand-only CPR if the victim experiences cardiac and respiratory arrest. (Megawati et al., 2022).

Rescuing drowning victims necessitates a structured and well-practiced approach. Simulations that encompass steps such as calling for assistance, contacting emergency services, locating floating objects to aid the victim, employing appropriate swimming techniques, and performing hand-only cardiopulmonary resuscitation (CPR) if the victim experiences cardiac and respiratory arrest are crucial for enhancing the skills and confidence of rescuers. (World Health Organization, 2022).

Age has not been identified as a significant factor influencing the likelihood of performing a rescue. This suggests that training should prioritize other factors, such as experience, which can enhance individuals' proficiency and confidence in conducting rescues (Barcala-Furelos et al., 2021). Rescuers of older age should be aware of the risk of heart disease associated with age. Regardless of age, all rescuers should carefully consider their physical abilities when choosing to perform a rescue and undergo regular physical health check-ups (Koon, Rowhani-Rahbar, & Quan, 2018).

Although age is not a primary determinant in rescue success, older rescuers should be cognizant of health risks associated with aging, such as heart disease. Regular health assessments and physical fitness evaluations should be integral components of preparation for rescuers across all age groups. This ensures that rescue training addresses not only technical aspects but also individual awareness of physical condition. Individuals with higher education levels tend to possess more extensive knowledge compared to those with lower education levels. Additionally, they are more receptive to new ideas or concepts introduced during rescue training. (De Buck et al., 2021).

Individuals with higher levels of education tend to have more knowledge than those with lower education. In addition, people will easily accept the thinking of others (Barcala-Furelos, Graham, AbelairasGómez, & Rodríguez-Núñez, 2021).

Efforts to rescue drowning victims require a structured approach, including practical training as well as awareness of the rescuer's capabilities and limitations. Rescue simulations that include integrated steps, such as requesting help(A Fawzi, 2020) sing floating aids, swimming

techniques, and cardiopulmonary resuscitation (hand-only CPR), are essential to improve rescuers' skills and confidence. This is consistent with findings that show that experience and skills have more influence on rescue ability than age factors (Attard, Brander, & Shaw, 2015). Efforts to rescue drowning victims require a structured approach, including practical training and awareness of the rescuer's capabilities and limitations. Simulations that integrate steps such as calling for help, using floating aids, appropriate swimming techniques, and hand-only CPR are essential for enhancing rescuers' skills and confidence (World Health Organization, 2022). Overall, water rescue training should be designed to enhance practical competence, consider individual physical limitations, and provide knowledge applicable in emergency situations. A comprehensive approach ensures the safety of both victims and rescuers.The application of technology in rescue training, such as the use of advanced water rescue mannequins, can increase the realism and effectiveness of training. These mannequins are designed to float like an unconscious person and can be weighted to simulate various drowning scenarios, allowing rescue teams to thoroughly test their skills (Water & Manikin, n.d.).

Although age is not a determining factor in the success of a rescue, older rescuers face certain health risks, such as heart disease, which require more attention. Therefore, routine health check-ups and evaluations of physical abilities should be part of the preparation for rescuers of all age groups. Thus, rescue training not only focuses on technical aspects, but also on individual awareness of their physical condition.

In addition, higher education has been shown to be associated with increased understanding and ability to accept new concepts in rescue training. This demonstrates the importance of an educational approach in rescue training, both through formal and informal programs. By strengthening the educational aspect, individuals are expected to be more prepared to face emergency situations and be able to act effectively based on correct guidance.

Overall, water rescue training should be designed to improve practical competence, pay attention to individual physical limitations, and provide knowledge that can be applied in emergency situations. With a comprehensive approach, the safety of both victims and rescuers can be better guaranteed.

CONCLUSION

The simulation method is very effective for training laypersons in performing drowning first aid in an effort to reduce the incidence of injuries and fatalities in emergencies at water tourism areas. Based on the results of community service activities that have been carried out, it is still necessary to have continuity of planned activities. Socialization should not only be carried out to respondents as Pokdarwis members but also to the general public with a wider reach.

REFERENCES

A Fawzi. (2020). Pengaruh Media Pembelajaran Video Resusitasi Jantung Paru (RJP) Terhadap Tingkat Ketepatan Dan Kedalaman Pada Mahasiswa Keperawatan. *Journal of Health Science Community*. https://scholar.google.co.id/citations?view_op=view_citation&hl=id&user=Z5IlsikAAAAJ&sortby=pubdate&citation_for_view=Z5IlsikAAAAJ:ufrVoPGSRksC.

Al-Fa'izah, Z., Rahayu, Y. ., & Hikmah, N. (2017). Digital Repository Universitas Jember Digital Repository Universitas Jember. *Efektifitas Penyuluhan Gizi Pada Kelompok 1000 HPK Dalam Meningkatkan Pengetahuan Dan Sikap Kesadaran Gizi*, *3*(3), 69–70.

Attard, A., Brander, R. W., & Shaw, W. S. (2015). Rescues conducted by surfers on Australian beaches. Accident Analysis and Prevention, 82, 70–78. https://doi.org/10.1016/j.aap.2015.05.017.

Barcala-Furelos, R., Graham, D., Abelairas-Gómez, C., & Rodríguez-Núñez, A. (2021). Layrescuers in drowning incidents: A scoping review. American Journal of Emergency Medicine, 44, 38–44. https://doi.org/10.1016/j.ajem.2021.01.069.

Barcala-Furelos, R., Graham, D., Abelairas-Gómez, C., & Rodríguez-Núñez, A. (2021). Lay-rescuers in drowning incidents: A scoping review. *American Journal of Emergency Medicine*, *44*, 38–44. https://doi.org/10.1016/j.ajem.2021.01.069.

De Buck, E., Vanhove, A. C., Dorien, O., Veys, K., Lang, E., & Vandekerckhove, P. (2021). Day care as a strategy for drowning prevention in children under 6 years of age in low- and middle-income countries. *Cochrane Database of Systematic Reviews*, *2021*(4). https://doi.org/10.1002/14651858.CD014955.

Faradisi, F., Aktifah, N., & Kartikasari, D. (2021). Pelatihan Kegawatdaruratan Akibat Tenggelam (Henti Nafas Henti Jantung) Pada Pedagang Makanan Di Bibir Pantai Joko Tingkir Petarukan Pemalang. Jurnal Batik Mu, 1(1), 5–9.

Fibriansari, R. D., Maisyaroh, A., & Widianto, E. P. (2022). Pelatihan Pertolongan Pertama Korban Tenggelam pada Nelayan dengan Metode Simulasi. *Media Karya Kesehatan*, *5*(1), 116–126. https://doi.org/10.24198/mkk.v5i1.35905.

Franklin, R. C., Peden, A. E., Hamilton, E. B., Bisignano, C., Castle, C. D., Dingels, Z. V., … James, S. L. (2020). The Burden of Unintentional Drowning: Global, Regional and National Estimates of Mortality From The Global Burden of Disease 2017 Study. Injury Prevention, 83–96. https://doi.org/10.1136/injuryprev-2019-043484.

Franklin, R. C., Peden, A. E., Hamilton, E. B., Bisignano, C., Castle, C. D., Dingels, Z. V., Hay, S. I., Liu, Z., Mokdad, A. H., Roberts, N. L. S., Sylte, D. O., Vos, T., Abady, G. G., Abosetugn, A. E., Ahmed, R., Alahdab, F., Andrei, C. L., Antonio, C. A. T., Arabloo, J., … James, S. L. (2020). The burden of unintentional drowning: global, regional and national estimates of mortality from the Global Burden of Disease 2017 Study. *Injury Prevention*, *26*, I83–I95. https://doi.org/10.1136/injuryprev-2019-043484.

Jarvis, S., Salottolo, K., Berg, G. M., Carrick, M., Caiafa, R., Hamilton, D., Banton, K., Lieser, M., & Bar-Or, D. (2021). Examining emergency medical services' prehospital transport times for trauma patients during COVID-19. *American Journal of Emergency Medicine*, *44*, 33–37. https://doi.org/10.1016/j.ajem.2021.01.091.

Megawati, R. R., Tanujiarso, B. A., & Aisah, S. N. (2022). Edukasi Bantuan Hidup Dasar Melalui Pelatihan Pertolongan Pertama Korban Tenggelam Terhadap Pengetahuan Dan Keterampilan Nelayan. *NURSING UPDATE : Jurnal Ilmiah Ilmu Keperawatan P-ISSN : 2085-5931 E-ISSN : 2623-2871*, *13*(4), 332–346. https://doi.org/10.36089/nu.v14i1.1022.

Water, A., & Manikin, R. (n.d.). *A WORLD FIRST FOR WATER RESCUE TAKING WATER RESCUE TRAINING TO THE NEXT LEVEL*.

Wirmando, W., Saranga', J. L., Patarru', F., & Madu, Y. G. (2023). Edukasi dan Pelatihan Pertolongan Pertama pada Korban Tenggelam (Drowning) di SMKN 9 Makassar. *E-Dimas: Jurnal Pengabdian Kepada Masyarakat*, *14*(3), 450–456. https://doi.org/10.26877/e-dimas.v14i3.12895.

World Health Organization. (2022). *Preventing drowning*. https://www.who.int/publications/i/item/9789240046726.

Zurimi, S., Hariawan, H., & Bumbungan, A. (2021). Peningkatan Kemampuan Memberikan Bantuan Hidup Dasar Melalui Modeling Partisipan. *PREPOTIF : Jurnal Kesehatan Masyarakat*, *5*(1), 353–358. https://doi.org/10.31004/prepotif.v5i1.1599.