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STRENGTHENING LITERACY AND PSYCHOMOTOR SKILLS OF ADOLESCENTS IN FIRST AID FOR BLEEDING THROUGH PEC (PRESSURE-ELEVATION-COVER) TECHNIQUE SIMULATION

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ABSTRACT

Introduction: The adolescent age group is closely associated with high levels of physical activity, putting them at risk for injury, including bleeding. Therefore, proper first aid literacy and skills are essential through education and training. This community service activity aims to improve first aid literacy and psychomotor skills in bleeding among adolescents through education and training on PEC (Pressure-Elevation-Cover) techniques.

Methods: The activity was carried out in July 2025 at Senior High School 1 Puncu involving 35 students of 5 students per class from 7 classes. The activity began with interactive education related to the concept of bleeding for 60 minutes and continued with training with a simulation approach using simple equipment on how to provide first aid for bleeding for 120 minutes with pressure techniques, and covering. Pre and post data for literacy were measured using questionnaires and observation sheets for psychomotor abilities.

Results: An increase in the average literacy score (from 60 to 85) and psychomotor skills (most of the sufficient category became the majority in the good category). The results of statistical analysis using the Paired t-Test and Wilcoxon also showed a significant difference in literacy and skills pre and post with $p = 0.001$.

Conclusion: Education and training using the PEC technique simulation method are effective in improving literacy and psychomotor skills in first aid for bleeding in adolescents. The simulation method provides hands-on experience in quickly and accurately performing first aid for bleeding. Similar activities can be conducted periodically with a broader target audience.

KEYWORDS

education; first aid for bleeding; literacy; PEC technique; skills simulation.

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1. INTRODUCTION

Adolescence is a developmental phase characterized by maximum energy, high curiosity with various physical activities (sports, extracurricular activities and activities in the home environment). (Nita et al., 2024; Putri et al., 2025). This is accompanied by an increased risk of injury, including bleeding. Bleeding is an emergency that can lead to death quickly if not

treated correctly and quickly (Tandi, 2022). First aid is an effort to provide temporary assistance and treatment to accident victims before receiving more comprehensive assistance from a doctor or health worker (Anggraini et al., 2018). In emergency situations, proper first aid is the difference between safety and greater danger (Widayati et al., 2023). Bleeding incidents in students at both middle and

high schools have not received special attention. Untreated bleeding incidents can lead to complex problems (A'la et al., 2023). However, the phenomenon shows that adolescent literacy regarding bleeding management techniques is still relatively low, so that the first aid measures provided are less effective, and even have the potential to worsen the victim's condition.

Bleeding first aid using the Pressure–Elevation–Cover (PEC) technique is a simple, safe technique, and can be performed by anyone with adequate knowledge and skills, including teenagers. Mastery of this technique is not only useful when dealing with emergency incidents in the school or home environment, but also fosters self-confidence, empathy and social awareness. (Damayanti et al., 2024). Treatment to stop bleeding, splinting and evacuation of victims properly and correctly is very important to avoid severity (Nurani & Yanti, 2023).

Health literacy among adolescents cannot be built only through theoretical explanations. (Purwana et al., 2024). Interactive approaches are essential, such as simulations, which can provide opportunities to directly practice the skills learned. (Ardiansyah & Sudarto, 2022; Widayati et al., 2023). Through PEC simulations, adolescents are not merely spectators but also active participants in the learning process, experiencing how to apply appropriate pressure, adjust elevation positions, and apply advanced pressure techniques according to the situation. This

experience will be more firmly embedded in their memory, ready to be applied when needed.

This community service activity is a collaboration between healthcare workers, schools, and youth communities to strengthen literacy and first aid skills for hemorrhage patients. The hope is to create a generation of young people who are not only disaster-responsive but also ready to help others in need. Youth are agents of change who can act as extensions of healthcare workers, disseminating information on proper first aid for hemorrhage patients within their families. (Widayati & Rachmania, 2021). This community service activity aims to improve adolescent literacy and skills in providing first aid for bleeding through the PEC technique simulation.

2. MATERIAL AND METHODS

This community service activity through interactive education and training on the Press-Elevate-Close Technique Simulation was carried out in July 2025 at SMAN 1 Puncu with 35 participants aged 16-18 years selected by stratified random sampling (involving 7 classes represented by 5 students per class). The activity was carried out in 3 stages, namely the first stage was a pre-test measurement to measure adolescent literacy through the distribution of questionnaires that have been tested for validity and reliability and observation of adolescent skills in providing first aid for bleeding through observation sheets in the form of a checklist item. The second stage is the provision of interactive education and



Figure 1. Education Process



Figure 2. Photo Session

simulation training of advanced pressure-elevation-pressure techniques.

Interactive education is provided for 60 minutes while the simulation is given for 120 minutes. The simulation is given on how to provide first aid for bleeding with pressure techniques (pressing the source of bleeding), elevation (lifting or raising the injured body part above the heart level) and cover (covering the wound with a bandage or dressing to protect from contamination and maintain pressure) using simple equipment that is carried out directly by the participants and accompanied by a team of facilitators. The activity concluded with a post-test by distributing a questionnaire to measure literacy and an observation sheet to measure adolescents' psychomotor skills in performing first aid for bleeding. Data analysis was conducted descriptively by comparing pre-test and post-test scores related to literacy and psychomotor skills. Furthermore, to determine the effectiveness of the PEC simulation education and training on adolescents' literacy and skills in performing first aid for bleeding, analyses were also conducted using the Paired t-Test to measure literacy skills (comparing the average pre-test and post-test scores of paired groups) and Wilcoxon Signed Rank Test to measure respondents psychomotor abilities.

3. RESULTS

Table 1 shows that the majority of participants in this community service activity were female (68.6%), most of the participants were 17 years old (77.1%) and most of the participants (85.7%) had never received information regarding first aid for bleeding.

Information based on Table 2 states that the average literacy score of adolescents in first aid for bleeding before being given the PEC technique simulation intervention in first aid for bleeding was 60 with a value range of 45 to 75. After the intervention, there was an increase in the score to an average of 85 with a value range of 70 to 95. The results of the paired t-test showed a p value of 0.001

Table. 1 Participant Characteristics Based on Age, Gender, and Information Exposure History

Category	f	%
Gender		
Male	11	31.4
Female	24	68.6
Age		
16	1	2.9
17	27	77.1
18	7	20
Ever received information on first aid for bleeding		
Yes	5	14.3
No	30	85.7
Total	35	100

($\alpha = 0.05$), which means there was a statistically significant difference between the literacy scores before and after the intervention. These results indicate that the PEC simulation intervention is effective in increasing adolescent literacy regarding first aid in cases of bleeding.

Based on Table 3, before the PEC technique simulation intervention, the psychomotor abilities of adolescents in first aid for bleeding showed that most were in the sufficient category, namely 20 people (57.1%), followed by the good category of 10 people (28.6%), and the poor category of 5 people (14.3%). After the intervention, there was an increase in the good category, namely to 27 people (77.1%), while the sufficient category decreased to 6 people (17.1%), and the poor category decreased to only 2 people (5.8%). The results of the Wilcoxon signed rank test showed a p value of 0.001 ($\alpha = 0.05$), which indicated a significant difference in psychomotor abilities before and after the intervention. These findings strengthen that the PEC technique simulation is effective in improving adolescents' practical/psychomotor skills in providing first aid for bleeding.

4. DISCUSSION

The characteristics of the respondents in this activity indicate that the majority were 17-year-old girls, with most having never received information about first aid for bleeding. This condition aligns with previous findings that first aid knowledge and skills among

Table 2. Identification of Adolescent Literacy Scores in First Aid for Bleeding with the PEC Technique

Value	Pre	Post	n
Mean $\pm$ SD, Min–Maks	60 $\pm$ 8,0 (45–75)	85 $\pm$ 6,5 (70–95)	35
<i>Paired t Test P value 0,001 $\alpha = 0,05$</i>			

Table 3 Identification of adolescent psychomotor abilities in first aid for bleeding using the PEC technique

Psychomotor skills	Pre Test		Post Test	
	n	%	n	%
Good	10	28,6	27	77,1
Sufficient	20	57,1	6	17,1
Poor	5	14,3	2	5,8
Total	35	100 %	35	100
<i>Wilcoxon signed rank test P value 0,001 $\alpha = 0,05$</i>				

adolescents are still low, especially if they have not received formal or informal education on the subject. (Septiana et al., 2024). Adolescence is the optimal phase of cognitive and psychomotor development for receiving new material, so training in this age group has the potential to provide maximum learning impact. (Mustikhatul et al., 2025).

The significant increase in literacy scores after the intervention, from an average of 60 to 85 ($p = 0.001$), demonstrates the effectiveness of the PEC technique in delivering material interactively. This is in line with previous research that found that practice-based and simulation-based training methods improved participants' retention and comprehension compared to lecture methods. (Rahmawati & Hensa, 2025; Widayati, 2025). The fact that the majority of participants had never received the information before also influenced the extent of the increase in knowledge, because the material presented became a new and meaningful learning experience.

In terms of psychomotor skills, there was a significant change from the fair to good category for most participants, with the proportion of the good category increasing from 28.6% to 77.1% ($p = 0.001$). This finding confirms that learning practical skills requires a combination of demonstration, hands-on practice, and feedback, allowing participants to correct errors and improve the quality of their actions. (Widayati et al., 2025). Trained first aid skills are essential, given that initial response time is often

the determining factor in a victim's survival before medical personnel arrive. (Damayanti & Setyorini, 2023).

Considering the characteristics of the participants, who were predominantly female adolescents with minimal prior experience, the successful improvement in literacy and skills demonstrates that training using the PEC technique can bridge the knowledge gap and foster youth preparedness. Such training needs to be implemented sustainably and expanded, for example through extracurricular school programs or youth organization activities, so that more young people are prepared to become first responders in their communities.

The results of the activity showed an increase in the average literacy score from 60 to 85, as well as an increase in psychomotor skills from the majority of participants in the fair category to the majority in the good category. Statistical tests showed a significant difference between pre- and post-activity scores for both variables ($p = 0.001$), indicating that the education and simulation of the Pressure, Elevate, Cover (PEC) method significantly improved participants' knowledge and skills.

This improvement can be explained through the principle of experiential learning, where the learning process is not only delivered through lectures but also accompanied by demonstrations and hands-on practice. This approach simultaneously engages cognitive, affective, and psychomotor aspects, making

the material easier to internalize and remember. This aligns with previous research findings that simulation-based training can improve health literacy and practical skills in emergency management. (Ardiansyah & Sudarto, 2022).

Furthermore, the PEC method is simple, requires no special equipment, and is relevant to everyday situations, making it easy for participants to understand and practice. Hands-on experience in simulation also builds muscle memory and increases participants' confidence in responding quickly to bleeding situations in their environment.

Socially, this increase in literacy and skills has the potential to strengthen community preparedness, particularly among youth, who are often at the first scene of an injury. (Widayati, 2025). With adequate skills, they can be effective first responders, thereby reducing the risk of complications or death due to bleeding.

5. CONCLUSION

Educational activities and simulations of the Pressure, Elevation, Cover (PEC) technique have been shown to improve adolescents' literacy and skills in providing first aid for bleeding cases. The increase in the average knowledge score from 60 to 85 and the change in psychomotor skills from the majority category to good indicate that an interactive and applied learning approach is highly effective for this age group. Strengthening adolescents' capacity in first aid should be a sustainable program in schools and communities. Simulation-based training such as the PEC technique needs to be conducted regularly, with the support of teachers, parents, and health workers. Furthermore, developing trained young health cadres can broaden the positive impact on the community, so that every adolescent has basic skills that can save lives.

6. REFERENCES

A'la, M. Z., Haristiani, R., & Yunanto, R. A. (2023). Program Peningkatan Pengetahuan dan

- Keterampilan Siswa/Siswi dalam Penanganan Pertolongan Pertama pada Perdarahan di SMA Negeri 1 Jember: Students' Knowledge and Skills Enhancement Program on First Aid of Bleeding at Senior High School I Jember. *Jurnal Pengabdian Kepada Masyarakat: Kesehatan*, 3(2), 1–8.
- Anggraini, N. A., Mufidah, A., Putro, D. S., Permatasari, I. S., Putra, I. N. A., Hidayat, M. A., Kusumaningrum, R. W., Prasiwi, W. F., & Suryanto, A. (2018). Pendidikan kesehatan pertolongan pertama pada kecelakaan pada masyarakat di kelurahan dandangan. *Journal of Community Engagement in Health*, 1(2), 21–24.
- Ardiansyah, F., & Sudarto. (2022). Edukasi Dan Simulasi Bantuan Kegawatdaruratan Balut Bidai, Evakuasi Dan Transportasi Pada Kasus Cidera Bagi PMR SMAN 1 Sei Ambawang Kubu Raya. *Jurnal Pengabdian Kesehatan Komunitas*, 02(3), 20–31.
- Damayanti, D., & Setyorini, D. (2023). Analisis Faktor Yang Mempengaruhi Kemampuan Pertolongan Pertama Luka Bakar Setelah Pemberian Edukasi. *Jurnal Keperawatan Priority*, 6(1), 65–71. <https://doi.org/10.34012/jukep.v6i1.3185>
- Damayanti, D., Widayati, D., & Prasetyo, B. (2024). *Kombinasi Edugame Dan Demonstrasi Balut Bidai Terhadap Kemampuan Pertolongan Pertama Korban Kecelakaan Lalu Lintas STIKES Karya Husada Kediri , Indonesia Organization , 2023). Menurut data WHO 2018 diperkirakan 70 % kecelakaan lalu lintas Berdasarkan hasi*. 8(1).
- Mustikhathul, A., Dini Wulandari, Fahira Amanda Putri, Siti Khotijah, Siti Sulistiawati, & Wulan Ariyanti. (2025). Perkembangan pada Anak menurut Santrock. *Early Childhood Journal*, 3(2), 88–101. <https://doi.org/10.30872/ecj.v3i2.4856>
- Nita, L. L., Widayati, D., Nisa, K. N., & Rakha, A. S. (2024). Introduction to prevention and treatment musculoskeletal injury in pmr sman 1 kandangan management. *Jurnal AbdimasPamenang -JAP*, 2(2), 104–109.
- Nurani, R. D., & Yanti, F. (2023). Pelatihan pertolongan pertama menangani masalah perdarahan dan evakuasi korban pada remaja di SMA N 8 Bandar Lampung. *Jurnal Pengabdian Masyarakat Bunda Delima*, 2(1), 20–24.
- Purwana, R., Novianti, W., Baiduri Siregar, R., Saputra, H., Farmasi dan Kesehatan, F., Studi, P. D., Kesehatan Helvetia, I., Tebingtinggi Deli, S., Tinggi, T., & Studi, P. S. (2024). Pengaruh Program Literasi Kesehatan terhadap Pengetahuan Mahasiswa Mengenai Gaya Hidup Sehat. *Journal Healthy Purpose*, 3(2), 156–162. <https://doi.org/10.56854/jhp.v3i2.431>

- Putri, D. A. L., Kisnawaty, S. W., & Zulaekah, S. (2025). Hubungan Asupan Energi dan Aktivitas Fisik dengan Status Gizi Pada Remaja. *Nutrix Journal*, 9(1), 1. <https://doi.org/10.37771/nj.v9i1.1253>
- Rahmawati, I., & Hensa, F. (2025). Latihan Gabungan Simulasi Manajemen Tanggap Darurat Bencana. *Journal of Community Engagement and Empowerment*, 7(1), 34–39.
- Septiana, N. Z., Istiqomah, N., & Rahayu, D. S. (2024). Literasi Kesehatan Mental: Dampak Perilaku dan Resiliensi Sosial Pada Remaja. *Nusantara of Research : Jurnal Hasil-Hasil Penelitian Universitas Nusantara PGRI Kediri*, 11(1), 81–91. <https://doi.org/10.29407/nor.v11i1.21610>
- Tandi, A. N. (2022). Pengetahuan Pertolongan Pertama Pada Perdarahan Luar Volunteer Fire Brigade Di Dataran Tinggi Pt Freeport Indonesia. *Jurnal Kesehatan*, 10(1), 35–40. <https://doi.org/10.55912/jks.v10i1.46>
- Widayati, D. (2025). Emergency Preparedness Plannig And Its Effect On Landslide Disaster Readiness : A Commmunity-Based Study. *Indonesian Journal Of Community Health Nursing*, 10(2), 43–49. <https://doi.org/10.20473/ijchn.v10i2.71949>
- Widayati, D., Ludyanti, L. N., Rachmania, D., Trilina, I., Studi, S., Stikes, K., Husada, K., Studi, S., Stikes, K., Husada, K., Studi, P., Keperawatan, S., Karya, S., Kediri, H., Studi, P., Keperawatan, S., Karya, S., & Kediri, H. (2023). *PENGENALAN & SIMULASI SAFE TRANSFER TECHNIQUE KORBAN CIDERA PADA ANGGOTA PMR*. 02(03), 671–675.
- Widayati, D., & Rachmania, D. (2021). Pemberdayaan Peer Tutor Breathing Exercise Sebagai Upaya Meningkatkan Pengetahuan Manajemen Pencegahan Kegawatan Covid-19 pada Remaja di SMK Pemuda Papar Kediri. *Jurnal TRI DHARMA MANDIRI*, 1(2), 52–64.
- Widayati, D., Rachmania, D., & Setyorini, D. (2025). Optimalisasi Generasi Muda Siaga Melalui Pelatihan Bantuan Hidup Dasar (BHD) Berbasis Demonstrasi. *Jurnal Abdi Kesehatan Dan Kedokteran*, 4(2), 95–107. <https://doi.org/10.55018/jakk.v4i2.78>