

The Influence of First Aid Education on Knowledge Work Accidents in Students of SMK 4 Banda Aceh

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ABSTRACT

First aid is the initial action given to individuals who experience emergency conditions due to injury or accident, before receiving further medical treatment. A person's level of knowledge plays an important role in supporting the effectiveness of education regarding first aid for work accidents. Work accidents themselves can be caused by human factors or environmental factors. This study aims to analyze the effect of first aid education on increasing students' knowledge about work accidents. The method used is quantitative research with a pre-experimental design. The sampling technique used total sampling, with a total of 33 students as respondents. The study was conducted on March 10, 2025 using a questionnaire instrument. The results showed that before being given education, all students (33 people) had a low level of knowledge. However, after receiving education, all respondents experienced a significant increase in knowledge into the good category. Based on the results of the hypothesis test, a p value of 0.000 (<0.05) was obtained, which indicates that H_0 is rejected and H_a is accepted. Thus, it can be concluded that first aid education has a significant effect on increasing students' knowledge about work accidents.

Keyword: First Aid Education, Work Accidents, Knowledge

Introduction

According to the standards set by the Indonesian Red Cross in the Wira Muda P3K manual, first aid refers to basic medical actions given quickly to individuals experiencing a medical emergency. This action aims to stabilize the victim's condition, prevent the condition from worsening, and provide comfort until professional medical assistance arrives (Anisah & Parmilah, 2020).

According to Retno (2020), first aid is defined as providing initial assistance to someone who needs emergency treatment due to injury or accident.

Work accident is an incident caused by human factors and environmental factors, from human factors, work accidents occur due to the unbalanced physical condition of the workforce, minimal worker education, workers doing work that is not their expertise, workers not using PPE, long working hours, and so on (Anizar, 2021).

The number of work accidents has been confirmed by statistics showing that work-related deaths reach more than 2.78 million people per year, of which two-thirds (2/3) occur in Asian countries (ILO, 2020). Based on ILO data in 2020, more than 1.8 million deaths occurred in the Asia and Pacific region, with 374 million cases of work-related injuries and diseases recorded each year. According to BPJS Ketenaga kerjaan data in 2020, the number of work accidents in Indonesia has increased (Widianto, 2021). Compared to 2019 which recorded 114 thousand cases, the number of work accidents in the period from January to October 2020 increased to 177 thousand cases (Widianto, 2021).

Based on data from the Indonesian Ministry of Health (Kemenkes RI) in 2020, as many as 9.2% of injury cases in Indonesia hampered individuals' daily activities. This data also shows that adolescents aged 15-24 years have a high risk of injury with a prevalence of 12.2%. Injury cases in male adolescents reached 11%, and most injuries occurred in schools or educational institutions at 13% (Kemenkes RI, 2020). Meanwhile, according to the 2019 Kemenkes RI report, Aceh Province reported 22,438 cases of work accidents throughout the year with claims reaching IDR 89.75 billion (Ministry of Health of the Republic of Indonesia 2019).

Knowledge according to the Big Indonesian Dictionary (KBBI), knowledge is information related to education. The learning process is influenced by several external and internal factors, including socio-cultural background, availability of information sources, and motivation (Suhardi, 2021).

Based on previous research conducted by Ayu Kartikasiwi *et al* ., (2022) entitled Providing First Aid Education in Accidents (P3K) in Increasing Knowledge and Motivation of Youth Red Cross (PMR) Members, it was found that before the intervention, the majority of respondents had a sufficient level of knowledge, namely 87.1% (25 people). However, after the intervention, all respondents (100% or 32 people) showed an increase in knowledge to the good category.

In the initial survey conducted at SMK 4 Banda Aceh, it was found that 5 students said that sometimes there were frequent work accidents such as being caught in a wheel rim, being hit by a tool/machine, being hit by a jack, being hit by sparks during welding, being hit by a screwdriver and other work accidents. with a percentage of 15%. When asked what kind of assistance was given during a work accident at school, some of them answered using betadine. In the initial survey interview stage, the 5 students also stated that they had never attended first aid training.

The increasing number of work accidents requires immediate treatment, such as education on first aid for work accidents (P3K) (Widianto, 2021). The purpose of this first aid is to save the victim's life, reduce pain, prevent the condition from getting worse, and keep the victim stable until they can get further treatment (Afif, 2020).

Research Method

The type of research used is quantitative research with a pre-experimental design. The sampling technique uses total sampling, with a total of 33 students as respondents. This method is a quantitative research design that aims to test cause and effect in one or several groups (Sugiyono, 2020)

The sampling technique used is total sampling, namely all populations are used as samples in the research (Sukwika, 2023). In this study, the analysis conducted was univariate to determine the effect of first aid education on students' knowledge of work accidents.

Results and Discussion Results

Table 1: Frequency Distribution of Respondents By Age

characteristics Respondent	Variable	<i>f</i>	%
Age	15 years	13	39.4%
	16 years	14	42.4%
	17 years	5	15.2%
	18 years	1	3.0%
	Total	33	100%

Source: primary data, 2025

Based on the data distribution table, the age group (15 years) was 13 people, (16 years) 14 people, (17 years) 5 people, and (18 years) 1 person, the total number of respondents was 33 people.

Table 2: Frequency Distribution of Respondents Based on Experience Following First Aid

Characteristics Respondent	variable	<i>f</i>	%
Once Follow Help First	Once	0	0 %
	No	33	100%

Source: primary data, 2025

Based on the data distribution table above from 33 respondents, all students have never participated in first aid education.

Table 3: Level of knowledge pre-post education

Knowledge	Pre		Post	
	f	%	f	%
Good	0	0 %	33	100%
Not enough	33	100%	0	0 %
Total	33	100%	33	100%

Source: primary data, 2025

Based on the distribution of data above from 33 respondents, before first aid education was carried out, 33 students had a low level of knowledge, after being given education, all respondents showed an increase in knowledge to the good category.

Table 4: Average Values Pre And Post Education

Variables	F	mean	std. Deviation
Pre Knowledge	33	6.30	1,510
Knowledge Post	33	22.73	1,485

Source: primary data, 2025

Based on the table of average values above from 33 respondents, before first aid education was carried out, 33 students had an average pre value of 6.30. After being given education, all respondents showed an increase in average value of 22.73.

Table 5: Influence Of First Aid Education On Knowledge Work Accidents In Students

	Mean Rank	Sum of rank	Z	p -v alue
pre and knowledge post	17.00	561.00	-5,047	0, 000

Source: primary data, 2025

The Wilcoxon test results show that the mean rank value for knowledge before and after education is 17.00, which indicates an increase in knowledge in respondents after being given education. In addition, the sum of rank pre-post knowledge value of 561.00 indicates the total rank of changes in the level of knowledge of respondents.

Discussion

a. Level of knowledge before first aid education for work accidents

Based on the distribution of data from 33 respondents, before being given education on first aid, all students showed a low level of knowledge with an average score of 6.30. After the implementation of education, there was an increase in all respondents, with an average knowledge score increasing to 22.73, which is included in the good category.

Based on previous research conducted by Ayu Kartikasiwi *et al.*, (2022) entitled Providing First Aid Education in Accidents (P3K) in Increasing Knowledge and Motivation of Youth Red Cross (PMR) Members, it was found that before the intervention, the majority of respondents had a sufficient level of knowledge, namely 87.1% (25 people). However, after the intervention, all respondents (100% or 32 people) showed an increase in knowledge to the good category.

Based on previous research conducted by Suryanta (2023), with the title Influence Training First Aid in Accidents on the Level of Knowledge of PMR Members at SMA Negeri 1 Pejagoan, it was found that there was a difference in the level of knowledge of first aid before and after education on first aid. The results of the analysis on the Wilcoxon test obtained a p-value = 0.00 ($p < 0.05$). So it can be concluded that there is an effect of first aid education on the level of knowledge of PMR members at SMA N 1 Pejagoan.

These findings indicate that before being given education on first aid, students' knowledge levels were still relatively low, but increased after education was given. This increase in knowledge is also influenced by several factors, one of which is age. Age plays a role in the development of a person's knowledge, both

through personal experience and from others. The older a person is, the broader their insight and knowledge will be (Rachmadhani, 2021).

b. Level of knowledge after first aid education for work accidents

The results of the study after being given education showed that 33 respondents experienced an increase in knowledge to reach the good category. This finding confirms that there is a significant difference in the level of knowledge of respondents before and after education was given.

These results are in line with previous research conducted by David Limanan. *et al.*, (2023) with the title First Aid Education for Accidents (P3K) for Karang Taruna, Darung Village, Serang City . The results showed an increase in the average value from 63.59 in the pretest to 81.28 in the post-test, with an increase in knowledge of 21.77%. In addition, Fauzan Alfikrie's research (2019) . The results of the study using the Wilcoxon statistical test showed that there was an effect of education with demonstration and roleplay methods on knowledge in traffic police (α 0.001).

These results are also supported by research by Mimi Rosiska *et al* (2024). The results of the study showed that before being given First aid training intervention for bleeding respondents had less ability. After being given first aid training intervention for bleeding, most of the respondents' abilities were good. From the statistical test, a p value of 0.001 was obtained, so there was an effect of First Aid Training for Accidents (P3K) on the Community's Ability to Provide First Aid for Bleeding to Accident Victims in the Kumun Health Center Work Area.

According to the Big Indonesian Dictionary (KBBI), knowledge is information related to education. The learning process is influenced by various external and internal factors, including socio-cultural background, availability of information sources, and motivation (Suhardi, 2021). Based on the description above, the researcher concluded that there was an increase in understanding after being given education about First Aid. This result shows that the education carried out has an impact on respondents.

c. The influence of first aid education on knowledge of work accidents in students of SMK 4 Banda Aceh

Before conducting statistical tests, researchers first conducted a normality test using Shapiro-Wilk to determine whether the data was normally distributed or not. The results of the Shapiro-Wilk test showed that the data was not normally distributed, with a pre value of 0.001. and the post value is 0.000 so that data analysis is continued with the Wilcoxon non-parametric test .

The results of the analysis using the Wilcoxon test showed that in the knowledge variable, a p-value of 0.00 was obtained with a significance limit of 0.05. Because the p-value is smaller than α , H1 is accepted. This shows that first aid education has a significant effect on knowledge about work accidents in SMK 4 Banda Aceh students. The results of this study are also in line with the results of Fauzan Alfikrie's study (2019) . The results of the study using the Wilcoxon statistical test showed that there was an effect of education with demonstration and roleplay methods on knowledge in traffic police (α 0.001).

The results of this study are in line with Supriyadi (2022), an occupational safety consultant, who stated that "Knowledge about Occupational Safety and Health (K3) should be given to students from an early age so that they are familiar with the principles of safety while working, especially when facing high-risk field conditions." This is in line with the findings of the Indonesian Occupational Safety Development Institute (LPKKI) in 2022 which showed that occupational safety education programs provided to vocational school students were able to reduce the risk of work accidents by up to 45%.\

This knowledge is important to form a safety culture in the workplace and reduce the risk of injury or even death that can occur in the workplace. At SMK One Heart Karawang, efforts to equip students with K3 knowledge are very important considering the large number of students involved in work practices in various industries. An internal survey conducted by the school showed that 62% of students did not fully understand safety procedures when working with heavy equipment or hazardous chemicals. In fact, the Karawang Health Office stated that the use of PPE and the implementation of correct safety procedures can reduce the number of work accidents by up to 50% (Karawang Health Office, 2023).

This condition shows the urgency of the need for occupational safety education programs in vocational schools, especially to increase students' awareness and understanding of the importance of occupational safety. According to *the World Health Organization* (WHO), a good OHS training program should include aspects such as identifying potential hazards, using PPE, and implementing standard operating procedures (SOPs) in various work situations. WHO also emphasizes that "knowledge and awareness of occupational safety are important foundations for creating a healthy and productive work environment" (WHO, 2022).

Therefore, this program not only aims to provide education, but also to form a proactive attitude in maintaining personal safety and the work environment. With this readiness, students are expected to become workers who are not only technically skilled, but also have a high awareness of the importance of work safety, so that they can contribute to reducing the number of work accidents in the future. This effort is part of the contribution to achieving the Sustainable Development Goals (SDGs) number 8, namely decent work and economic growth, one of the indicators of which is creating a safe and inclusive work environment.

Based on the researcher's assumption, providing first aid education for work accidents with an educational method can be easily accepted because it is effective in increasing respondents' knowledge. After receiving intervention in the form of education, there was an increase in respondents' knowledge scores. The results of the study also showed that the education was able to increase respondents' knowledge. The results of the statistical test indicated a significant difference in the level of knowledge before and after receiving first aid education, which means that the education had a positive effect on increasing respondents' knowledge.

Based on explanation above, researcher conclude that education help First influential to improvement knowledge students of SMK 4 Banda Aceh. With Thus, students at school the has understand and know how procedure help the first one that can done when finding the victim.

Conclusion

Based on the research results, the following conclusions can be drawn:

1. Before first aid education was given, 33 students had an average pre- score of 3,60. After educatin was given, all students showed an increase in scores with an average of 22,73.
2. The results of the analysis using the Wilcoxon test showed that in the knowledge variable, a p-value of 0.00 was obtained with a significance limit of 0.05.

Suggestion

The results of this study are expected to benefit various parties. For students, it is hoped that they will gain understanding and the ability to independently handle work accidents. Educational institutions, such as SMKN 4 Banda Aceh, can utilize these findings as additional references and as a means to broaden their insights into first aid, enabling appropriate initial actions during emergencies like bleeding, burns, or fractures. Furthermore, it is recommended that institutions establish collaborative programs with vocational high schools in Banda Aceh through community service activities focused on first aid education for work accidents. This not only helps improve students' knowledge and preparedness from an early age but also strengthens the institution's role in applying practical knowledge within the community. Lastly, for other researchers, this study can serve as a reference for future research by incorporating new variables or comparison groups, such as exploring specific first aid skills for handling burns, fractures, and other injuries.

Reference

1. Abriyani, Riyana. (2022). Pengaruh Kemandirian Belajar dan Lingkungan Belajar Terhadap Prestasi Belajar IPS Siswa Kelas V SDN 04 Tegalgede Tahun Pelajaran 2022. Skripsi S-1 Progd PGSD UMS. Surakarta: Universitas Muhammadiyah Surakarta.
2. Anisah, L. R., & Parmilah. (2020). Edukasi Pertolongan Pertama Pada Kecelakaan (P3K) Bagi Palang Merah Remaja (PMR)... Jurnal Kesehatan, 9(2), 2721–8007.
3. Anizar. (2021). Teknik Keselamatan dan Kesehatan Kerja di Industri (Cetakan II). Yogyakarta: Graha Ilmu.
4. Arifin, Ridwan Nur, & Waladani, Barkah. (2023). Pengaruh Edukasi Pertolongan Pertama Terhadap Tingkat Pengetahuan Anggota Palang Merah Remaja. Prosiding University Research Colloquium.
5. Buku Saku Keterampilan Dasar P3K & Kegawatdaruratan di Rumah. TIM: Jakarta. Octama. (2012).
6. Dewi, D. A. W. T., Sila, I. M., & Widiastuti, N. L. G. K. (2022). Pengaruh Model Problem Based Learning... Widya Accarya, 13(2), 145–152.
7. Dewi, R. K., Megasari, A. L., Nurvita, S., Kusumawati, I., & Suyati, S. (2022). Pengantar Kesehatan Reproduksi dan Keluarga Berencana (M. J. F. Sirait, Ed.). Yayasan Kita Menulis.
8. Ferisa, dkk. (2014). Perwujudan dan Prinsip Kemanusiaan Oleh Anggota Palang Merah Remaja di SMA Negeri 1 Rembang Purbalinga Jawa Tengah.
9. Gonzales, A., Bonilla, J., Quintero, M., Reyes, C., & Chavarro, A. (2021). Analysis of The Cause and Consequences of Accident... 31(1), 5.
10. Hasibuan, A., et al. (2020). Teknik Keselamatan dan Kesehatan Kerja (J. Simarmata, Ed.). Yayasan Kita Menulis.
11. Hutagalung, M. S. (2021). Pengetahuan, Sikap dan Tindakan Stroke... (T. Hikam, Ed.). Nusamedia.

12. ILO. (2020). Keselamatan dan Kesehatan sebagai Inti Masa Depan Pekerjaan?... <https://www.ilo.org/>...
13. Jovanovic, J. (2004). Prevention of Occupational Accident. 43(1), 49.
14. Jurnal Citizenship, vol. 4 No. 1 Juli. Gandhi, K., & Gandhi, M. (2016).
15. Anisah, L. R., & Parmilah. (2020). First Aid Education for Accidents (P3K) for Youth Red Cross (PMR). Health Journal, 9(2), 2721–8007.
16. Retno. (2020). First Aid Education for Accidents. Vol. 9, Issue 2.
17. Anizar. (2021). Occupational Safety and Health Techniques in Industry (2nd ed.). Yogyakarta: Graha Ilmu.
18. International Labour Organization (ILO). (2020). Safety and Health at the Heart of the Future of Work? Retrieved from <https://www.ilo.org/>.
19. Widiyanto, S. (2021, January 15). Workplace Accidents in 2018 Reached 173,015 Cases. Pikiran Rakyat.
20. Ministry of Health of the Republic of Indonesia. (2022). Key Results of the 2018 Basic Health Research. Ministry of Health RI.
21. Suhardi. (2021). Philosophy of Science Preferences (R. Sawiri, Ed.). CV. Pusdikra MJ.
22. Sugiyono. (2020). Quantitative, Qualitative, and R&D Research Methods. Bandung: Alfabeta