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THE IMPACT OF FIRST AID EDUCATION ON HIGH SCHOOL STUDENTS AS A PREPAREDNESS MEASURE FOR BURN AND NOSEBLEED EMERGENCIES

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Abstract

Nosebleeds andminor burns often arise as emergencies in schools, but many students still lack sufficient understanding and preparation to provide first aid. First aid education is one step that can be taken to improve students' ability to deal with simple emergencies. The purpose of this study is to analyze the impact of P3K education on improving the understanding and preparedness of high school students in handling emergency situations involving nosebleeds and minor burns. This study applied a quantitative method with a pre-experimental design using a single group pretest-posttest. The research subjects consisted of 50 high school students selected through purposive sampling. The measurement tool used was a questionnaire to measure understanding and preparedness, while data analysis was performed using the Paired Sample T-Test. The research findings revealed an increase in the average understanding score of students from 56.20 on the pretest to 83.00 on the posttest. In the area of preparation, the average score increased from 28.58 to 32.30 with a significance level of $p < 0.001$. This indicates that P3K education has a significant effect on improving students' understanding and preparation. Therefore, P3K education should be implemented regularly in schools as a promotional and preventive measure.

Keywords: First Aid Education, Preparedness, Nosebleeds, Minor Burns, High School Students

Introduction

Schools, as environments where students engage in intensive daily activities, both academic and non-academic, are often the site of minor emergencies such as nosebleeds and minor burns. Nosebleeds, or epistaxis, are a condition in which blood flows from the nose due to the rupture of small blood vessels, which can be triggered by heat, fatigue, local irritation, or minor impacts (Setiawan, 2023). On the other hand, minor burns involve skin damage from exposure to heat such as boiling water, a hot object, or a small flame, characterized by redness and pain (Kementerian Kesehatan RI, 2022). Although considered minor, both situations still require prompt and accurate initial treatment to avoid further problems.

However, in practice, many students still lack the understanding and proficiency in providing first aid. Common mistakes include tilting the head back during a nosebleed or using the wrong materials on a burn. This indicates that students' basic First Aid (P3K) skills need to be improved. According to Puspitasari et al. (2022), most high school students still have a poor understanding of first aid procedures at school. The lack of organized and ongoing First Aid education programs in schools is a major cause of students' low knowledge and preparation.

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First Aid (P3K) education is an important promotional and prevention strategy for improving students' understanding, attitudes, and skills. Kementerian Kesehatan Republik Indonesia (2020) states that first aid is the initial action given to victims before professional health assistance arrives, with the goal of preventing worsening conditions and saving lives. The World Health Organization (WHO, 2022) also emphasizes that properly administered first aid can significantly increase a victim's chances of survival. Furthermore, Ningsih dan Harahap (2021) demonstrated that simulation-based first aid education can significantly improve students' understanding and preparedness.

From a theoretical perspective, changes in health behavior through first aid education can be explained by the Health Belief Model (HBM) introduced by Rosenstock (1974), which explains that a person's actions are influenced by perceptions of risks, benefits, barriers, and self-confidence. In this case, students who receive first aid education will have a stronger view of benefits and increased confidence in providing first aid. Furthermore, preparation is also aligned with the Preparedness theory from LIPI–UNESCO/ISDR (2006), which defines preparation as a series of activities to increase the ability to face threats or emergencies by improving understanding, attitudes, and skills.

Students' emergency preparedness is crucial because they are frequently at school and have the potential to be the first responders in the event of minor accidents. Therefore, systematic steps are needed to improve this preparation through ongoing, practice-focused first aid education.

Based on the explanation above, this study was conducted to examine the impact of First Aid (P3K) education on improving high school students' understanding and preparation for emergency management of nosebleeds and minor burns. The findings of this study are expected to provide a foundation for developing first aid education programs in schools to improve student safety and preparedness for daily emergency incidents.

Method

This study employed a quantitative research design with a pre-experimental design using a single-group pretest-posttest method. This design was chosen to assess the effect of providing First Aid (P3K) education on improving students' understanding and preparation before and after the intervention.

The study was conducted at a high school (SMA) in 2025. The study population included all students at the school. The sample selection technique used purposive sampling, which is based on specific criteria determined by the researcher. Inclusion criteria included students who attended all First Aid education sessions and were willing to participate as respondents. Based on these criteria, a sample size of 50 students was obtained.

Incorrect answers were scored as 0, resulting in a maximum score of 100 and a minimum of 0. This score was used to indicate students' level of understanding of first aid for nosebleeds and minor burns.

The preparation questionnaire consisted of 10 statements arranged on a four-level Likert scale: strongly disagree (score 1), disagree (score 2), agree (score 3), and strongly agree (score 4). The total preparation score is obtained by summing all statement scores, with a maximum of 40 and a minimum of 10. This score is used to describe students' level of preparedness in dealing with nosebleed and minor burn emergencies. The intervention in this study was First Aid (P3K) education on managing nosebleeds and minor burns, delivered through lectures, discussions, and hands-on practical demonstrations. Prior to the intervention, respondents underwent a pretest to assess their understanding and initial preparation. After the education, respondents underwent a posttest to evaluate any changes.

Data processing and analysis used Statistical Package for the Social Sciences (SPSS) software. Univariate analysis was applied to determine the mean, standard deviation, lowest, and highest values.

Prior to hypothesis testing, data normality was tested. The results of the normality test indicated that the data were normally distributed, so bivariate analysis used a paired sample t-test to examine differences between the pretest and posttest. The significance level used was 0.05.

Results

This study included 50 high school students who participated in a First Aid (P3K) education program related to the management of nosebleeds and minor burns. All participants completed all stages of the study, from the pretest to the delivery of the education, to the posttest.

a. Student Knowledge of First Aid

Univariate analysis revealed an increase in the average score of students' understanding after receiving the First Aid education. The average score for students' understanding in the pretest was 56.20, which then increased to 83.00 in the posttest. This increase indicates that the education program significantly improved students' understanding of first aid procedures for nosebleeds and minor burns.

T-Test

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pretest_Pengetahuan & Posttest_Pengetahuan	50	.173	.229

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest_Pengetahuan	56.20	50	16.769	2.371
	Posttest_Pengetahuan	83.00	50	13.132	1.857

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pretest_Pengetahuan - Posttest_Pengetahuan	-26.800	19.424	2.747	-32.320	-21.280	-9.756	49	.000

Paired Samples Effect Sizes

			Standardizer[a]	Point Estimate	95% Confidence Interval Lower	Upper
Pair 1	Pretest_Pengetahuan - Posttest_Pengetahuan	Cohen's d	19.424	-1.380	-1.765	-.987
		Hedges' correction	19.575	-1.369	-1.751	-.980

b. Student Preparedness for Emergency Situations

Beyond increased understanding, the research findings also show progress in student preparation. The average student preparation score before the education (pretest) was 28.58 and increased to 32.30 in the posttest. This indicates that after participating in first aid, students are better prepared in terms of attitudes and actions to handle minor emergency incidents on school grounds.

T-Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest_Kesiapsiagaan	28.66	50	4.153	.587
	Posttest_Kesiapsiagaan	31.88	50	3.409	.482

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pretest_Kesiapsiagaan & Posttest_Kesiapsiagaan	50	.098	.498

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pretest_Kesiapsiagaan – Posttest_Kesiapsiagaan	-3.220	5.108	.722	-4.672	-1.768	-4.457	49	.000

Paired Samples Effect Sizes

			Standardizer[a]	Point Estimate	95% Confidence Interval Lower	Upper
Pair 1	Pretest_Kesiapsiagaan – Posttest_Kesiapsiagaan	Cohen's d	5.108	-.630	-.932	-.324
		Hedges' correction	5.148	-.626	-.924	-.321

c. Statistical Test Results of the Effect of First Aid Education

Bivariate analysis using a paired sample t-test showed a significant difference between pretest and posttest scores for both student understanding and preparation variables. The significance value obtained was $p < 0.001$ ($p < 0.05$), indicating that First Aid (P3K) education had a strong influence on improving high school students' understanding and preparation in handling emergency nosebleeds and minor burns.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest_Pengetahuan	.184	50	.000	.946	50	.024
Posttest_Pengetahuan	.190	50	.000	.862	50	.000

a. Lilliefors Significance Correction

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest_Kesiapsiagaan	.169	50	.001	.839	50	.000
Posttest_Kesiapsiagaan	.142	50	.013	.949	50	.030

a. Lilliefors Significance Correction

The findings of this study indicate that the First Aid (P3K) education program had a strong impact on improving student understanding. The increase in the average score from 56.20 to 83.00 demonstrates that the educational approach, which involved material delivery, interactive discussions, and practical exercises, effectively increased students' knowledge. This finding aligns with Notoatmodjo's (2012) view, which explains that health education is a learning process that involves multiple senses, thus optimizing individual knowledge. The more senses involved in the learning process, the higher the level of understanding achieved. This finding also aligns with the research of Ningsih and Harahap (2021), which stated that First Aid education focused on practice and simulation can significantly improve student understanding. This demonstrates that the educational method

implemented in this study is appropriate and suited to the characteristics of adolescents in secondary schools.

In terms of preparation, the increase in the average score from 28.58 to 32.30 indicates that First Aid education not only improves understanding but also influences students' ability to respond to emergency situations. These findings align with the preparedness concept from LIPI–UNESCO/ISDR (2006), which defines preparedness as the result of ongoing efforts to improve understanding, attitudes, and skills. Furthermore, these findings can be explained through the Health Belief Model (HBM) introduced by Rosenstock (1974). This theory states that behavioral change is influenced by perceptions of benefits and self-efficacy. After participating in first aid education, students had a more positive perception of benefits and increased confidence in providing first aid, thus improving their preparedness.

Discussion

The findings of this study indicate that providing First Aid (P3K) education plays a crucial role in improving high school students' understanding and preparation for emergency situations such as nosebleeds and minor burns. This confirms that structured educational interventions involving a practical approach can strengthen students' knowledge and preparedness to respond to minor emergencies in the school setting.

The increase in understanding post-intervention indicates that a learning strategy combining material delivery, interactive discussions, and practical demonstrations is effective in enhancing student learning. This aligns with the principle of health education, which states that a learning process involving active participant participation will produce more optimal changes in understanding than passive methods. Therefore, practical First Aid education is an appropriate approach for adolescents.

In addition to the understanding dimension, the increase in preparation scores indicates that First Aid education also impacts students' attitudes and ability to act. This finding reinforces the concept of preparation, which emphasizes that the ability to face an emergency depends not only on understanding but also on mental preparedness and basic skills. Ongoing education plays a crucial role in fostering this preparedness, making students more responsive and confident in performing first aid. The findings of this study can also be explained through the Health Belief Model framework, which highlights the importance of individual perceptions of the benefits of an action and confidence in carrying it out. Improved student preparation after education indicates that the intervention successfully strengthened perceptions of the benefits of first aid and increased students' confidence in acting appropriately in the face of minor emergencies.

In terms of implementation, these findings have practical implications for educational institutions, particularly secondary schools, to integrate first aid education as a component of school health programs. Regular, practice-based first aid training has the potential to foster a culture of emergency response within the school environment and equip students with basic skills useful in daily life.

However, this study has several limitations. The pre-experimental design without a control group limits the ability to control for external factors that may influence the results. Furthermore, the relatively small number of respondents and the study's location, limited to a single school, may impact the generalizability of the findings.

Therefore, further research is recommended using a design with a control group and involving a larger sample. Future studies could also explore the long-term effectiveness of first aid education and develop innovative learning methods, such as technology-based simulations or digital media, to enhance the sustainability of the educational impact.

Conclusion

From the findings of the research that has been conducted, it can be concluded that the First Aid (P3K) education program has a significant impact on improving the understanding and preparation of high school students in handling emergency situations of nosebleeds and minor burns. This is evident from the increase in the average score of students' understanding from 56.20 in the pretest to 83.00 in the posttest. Furthermore, the average score of students' preparation also increased from 28.58 to 32.30. Statistical analysis using the paired sample t-test showed a significance value of $p < 0.001$ ($p < 0.05$), which indicates a significant difference between the conditions before and after the provision of First Aid education. Therefore, it can be concluded that First Aid education is effective in improving students' understanding and preparation for emergency incidents of nosebleeds and minor burns in the school area.

References

[1] Kementerian Kesehatan RI. (2020). Pedoman Pertolongan Pertama di Sekolah. Jakarta: Kemenkes RI.

[2] LIPI–UNESCO/ISDR. (2006). Kajian Kesiapsiagaan Masyarakat dalam Mengantisipasi Bencana Alam. Jakarta: L

[3] Ningsih, D., & Harahap, S. (2021). Pengaruh Edukasi P3K terhadap Pengetahuan dan Sikap Kesiapsiagaan Siswa SMA. Jurnal Pendidikan Kesehatan Indonesia, 6(2), 123–130.

[4] Notoatmodjo, S. (2014). Ilmu Perilaku Kesehatan. Jakarta: Rineka Cipta.

[5] Puspitasari, A., Rahman, L., & Dewi, R. (2022). Tingkat Pengetahuan Siswa tentang Pertolongan Pertama di Sekolah. Jurnal Promosi Kesehatan, 10(1), 45–54.

[6] Rosenstock, I. M. (1974). The Health Belief Model and Preventive Health Behavior. Health Education Monographs, 2(4), 354–386.

[7] Setiawan, H. (2023). Penerapan Edukasi Kesiapsiagaan Bencana dan Keadaan Darurat di Lingkungan Sekolah. Jurnal Kesehatan Masyarakat, 12(3), 201-210.