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The impact of simulation training on enhancing the understanding of providing aid for injury cases among the Healthy Student Cadres (HSCs) at Assalafiyyah II Mlangi Islamic Boarding School

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ABSTRACT

Introduction: The students of Islamic boarding Schools, as agents of change, often experience complaints of muscle and joint injuries. Assalafiyyah II Mlangi Islamic Boarding School (IBS) was one of the pioneers of an integrated health system to improve health status. However, the condition of health facilities, especially those related to handling injuries, was still very minimal. In addition, the students had never received counseling regarding injury management. Therefore, it is necessary to conduct research related to the effect of health education in increasing knowledge about assisting in cases of injury to Healthy Student Cadres (HSCs) of Assalafiyah II Mlangi IBS. This study aimed to determine the effect of health education in increasing knowledge about assisting in cases of injury to healthy students Cadres Assalafiyyah II IBS.

Methods: This study was carried out using a quantitative experimental design. A one-group, quasi-experimental pretest-posttest approach was adopted in this study. The 40 healthy student cadres from Assalafiyyah II Mlangi IBS were recruited. The knowledge scores of the pretest (before health education) and post-test (after health education) were compared using the paired sample t-test. Furthermore, the Kruskal-Wallis test examined the relationship between education level and knowledge score.

Results: The pretest results showed that the level of knowledge of the subjects in the good category was 5%, adequate was 30%, and poor was 65%. In contrast, the post-test results showed an increase in knowledge scores. In particular, subjects in the excellent category were 47.5%, adequate was 40%, and poor were as much as 12.5%. This study also showed a significant change in the score of knowledge about assisting in cases of injury to subjects after providing health education in a positive correlation with $p = 0.000$. The level of education did not affect the results of the knowledge score about assisting in injury cases, with $p = 0.072$.

Conclusion: Providing health education materials effectively increases knowledge about helping Healthy Student Cadres (HSCs) in injury cases. This increase in knowledge can make Healthy Student Cadres (HSCs) pioneers in the surrounding environment regarding the importance of assisting in injury cases.

Keywords: Simulation training; injury; healthy cadres; student; islamic boarding school.
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INTRODUCTION

Islamic Boarding Schools (IBS), as a cultural heritage of Muslims, are the oldest educational institutions in Indonesia that have adopted a religious education system and have developed since the early arrival of Islam in the archipelago.[1] IBS are spiritual and educational institutions and social institutions that strongly influence society.[2] With the number of Islamic boarding schools in Indonesia, there are 27,722 IBS with 4,173,027 students who are agents of change and will be very influential for families and communities in Indonesia.[3]

The yearly rate for school injuries was 419.1 per 1,000 children from 2018–2019 in Lebanon. Boys demonstrated a significantly higher injury rate for all mechanisms of injuries, except for being injured while walking, in the gym/sports areas, and in the other regions outside the playground and classroom.[4] The students of IBS as agents of change also often experience complaints of muscle and joint injuries caused by low movement

activity, sitting in unfavorable conditions, trauma due to accidents during workouts, and repetitive movements in several body parts. Trauma is an injury to tissue caused by accidents or violence and causes various body responses to restore homeostasis.[5] Injuries can occur as a result of direct and indirect trauma. Strains are defined as injuries to the muscles or musculotendinous junctions, while sprains are injuries to the ligaments. Strains can occur due to excessive forces in the muscles so that the myofiber is too tight, and damage occurs at the musculotendinous junction.

Low health awareness, especially in injury management, needs to be supported in the program "Healthy Student Cadres (HSCs)".[6] Providing education in the form of presentations based on cases to students is an intervention that is readily accepted and can increase knowledge and awareness of injury cases that may be found in IBS. Interactive digital presentations positively affect memorizing concepts and students' engagement, and this kind of presentation is more efficient to use during the technology class compared to traditional learning methods.[7] Practical methods or simulation training can improve students' abilities in carrying out health promotion because it provides real experience.[8]

Assalafiyyah II Mlangi IBS, as one of the IBS in Sleman, Special Region of Yogyakarta, is a boarding school that will pioneer an integrated health system to improve the health status of students at IBS. Clean and Healthy Living Behavior (PHBS) is all health behavior carried out by personal awareness so that the community and all its members can help themselves in the health sector and actively participate in community activities. However, based on the results of research in the Assalafiyyah II Mlangi IBS, researchers saw that according to students' perception, the implementation of PHBS at the Mlangi Islamic Boarding School is good enough, but the medical equipment is insufficient.[9] In addition, the condition of the School Health Unit or *UKS* is inadequate, so it is necessary to improve infrastructure and medicines, especially those related to handling injuries, which are still minimal. In addition, based on the results of initial interviews with the Assalafiyyah II Mlangi IBS Board, the students had never received counseling regarding injury management. It's necessary to conduct research related to the effect of health education in increasing knowledge about assisting in cases of injury to healthy student cadres of Assalafiyah II Mlangi IBS.

METHOD

The research was conducted in August 2022 in Assalafiyah 2 Mlangi IBS. This is a quantitative experimental research. The type of research used was quasi-experimental, using a one-group pretest-posttest design. This research has received approval from the Medical and Health Research Ethics Committee of the Faculty of Medicine, Public Health and Nursing, Gadjah Mada University in Yogyakarta, Indonesia, with approval number KE/1012/08/2022. Intervention activities are carried out in the form of counseling using the lecture method using PowerPoint and practice based on cases regarding immobilization or procedures sprains (joint injuries), strains (muscle injuries), and venomous snake bites to students of the Assalafiyyah 2 Mlangi IBS, Gamping District, Sleman Regency, Special Region of Yogyakarta.

The measurement method is carried out by giving a pre-test before the intervention and a post-test after the intervention. The time for filling out the pre-post test was 15 minutes each, followed by 90 minutes of presentation and simulation of the material. The pre-post test contains the meaning of immobilization, the purpose and exact steps for immobilizing, and victim evacuation techniques. The questions are multiple-choice, consisting of 10 questions, with a score of +1 for a correct answer and -1 for an incorrect answer. The population in this study were the students of Assalafiyyah II Mlangi IBS at the Junior High School (JHS) and Senior High School (SHS) as the representatives for each level for every class. Sampling using a total sampling technique Total sampling is a sampling technique where the number of samples is equal to the population.[10]

The sample used in this study was 40 cadres. Data was processed electronically using the SPSS (Statistical Package for Social Science) program. The data is presented in tables and narratives. The research instrument used a questionnaire sheet with 10 question items covering knowledge of first aid. Before data analysis, the researcher conducted a normality test using the Shapiro-Wilk test.

Furthermore, if the data is normally distributed, the t-test (paired t-test) tests the hypothesis. However, if the data is not normally distributed, the hypothesis testing uses a non-parametric test (Wilcoxon Signed Rank Test). The Wilcoxon Signed Rank Test was used to measure the significance of the difference between two groups of paired data on a customarily distributed ordinal scale.

RESULT

The subjects in this study were students of the Assalafiyah II Mlangi IBS who took part in health education learning activities and had never received similar material. About 40 students are willing to participate in the training and fill out pretest and posttest questions about health education. Data in the form of pretest and posttest scores will be analyzed to find out how much students know and assess changes in scores from the pretest and posttest results.

Subject Characteristics

Data from 40 subjects showed that more than half of the subjects were female, 22 (55%) subjects, and 18 (45%) male subjects. The level of education in this study was grouped into two groups, namely Junior High School (JHS) with 11 (27.5%) subjects and Senior High School (SHS) with 21 (52.5%) subjects. There were eight missing data at the educational level, so there were only 32 subjects who had academic-level data.

Level of Subject Knowledge in Health Education

A total of 40 subjects filled out the pretest and posttest in the form of questions consisting of 10 questions before and after the delivery of health education materials. The level of knowledge is grouped into three groups, namely Good (value 76-100%), Adequate (60-75%), and Improper (<60%).[11] Subjects are distributed based on the results of the pretest and post-test scores attached in the table below.

The results of the pretest on health education showed that 2 (5%) subjects had a good level of knowledge, 12 (30%) subjects had a sufficient level of expertise, and 26 (65%) subjects had a poor level of understanding. The results of the posttest on health education showed that 19 (47.5%) subjects had a good level of knowledge, 16 (40%) subjects had a sufficient level of expertise, and 5 (12.5%) subjects had a poor level of understanding.

Based on the health education pretest score, the mean was 5.23; the standard deviation was 1.441. The median was 5.00, with a minimum value of 3 and a maximum of 8. The health education posttest score data obtained a mean of 7.13, a standard deviation of 1.265, and a median of 7.00 with a minimum value of 4 and a maximum of 9. The health education delta score data obtained a mean of 1.90, a standard deviation of 1.692, and a median of 2.00 with a minimum value of -2 and a maximum of 6. A normality test was performed on the health education delta score to determine the normality of the data distribution. The normality test uses the Shapiro-Wilk Test because the total data sample is <50. The delta normality test for the health education score has a significance value of 0.535 ($p > 0.05$). The data is normally distributed, so the delta analysis of health education scores uses the Paired sample t-test to determine the mean difference between the pretest and post-test scores. The results of the study using the paired sample t-test showed that the mean pretest-posttest scores for health education differed with a significance value of 0.000 ($p < 0.05$) so that there was a change in the form of increased knowledge of health based on the mean pretest scores to posttest scores.

Analysis of Education Levels with Health Education Scores

The respondents of this study consisted of 2 different levels of education, namely 11 respondents in JHS and 21 respondents in SHS. From this data, as many as eight respondents did not write down their level of education, so it could not be analyzed. First, a normality test was carried out on the data to be analyzed, and it was found that the data was not normally distributed, so the health education score was analyzed using the Kruskal-Wallis test.

Table 5 shows that all levels of education in the posttest have a higher median ± (min-max) value than the pretest. The significance of the Kruskal-Wallis pretest, posttest, and education scores was 0.371, 0.229, and 0.086 (p-value > 0.05). Thus, it can be seen that the level of education does not affect the education score given to the subject.

DISCUSSION

Based on the analysis results, providing health education materials effectively increases students' knowledge. We can see this from the change in pretest scores at the beginning of the study, which showed that two subjects (5%) were in a suitable category, 12 topics (30%) were in an appropriate variety, and 26 (65%) in the poor category increased to 19 (47). %) in the excellent category, 16 (40%) in the suitable variety, and 5 (12%) in the poor category during the posttest.

Likewise, the bivariate analysis also showed a difference in the average knowledge before and after the intervention ($p<0.05$). The mean before the intervention was 5.23 ± (1.441) increased to 7.13 ± (1.265) after the intervention. This is in line with other research showing that health education through lectures with the help of slides is effective in increasing knowledge.[12] According to Notoatmodjo, knowledge results from "knowing" and occurs after someone senses an object. The senses referred to here include sight, hearing, smell, taste, and touch. It is known that most human knowledge is obtained from the eyes and ears.[13] Submission of material using the lecture method with the help of

Tabel 1. Subject Data

Gender	n (%)
Male	18 (45%)
Female	22 (55%)
Level of Education	
Junior High School (JHS)	11 (27.5%)
Senior High School (SHS)	10 (52.5%)
Missing Data	8 (20%)

Table 2. Number of Subjects Based on Pretest and Posttest Scores Groups

	Good (%)	Adequate (%)	Improper (%)
Pretest Score	2 (5.0%)	12 (30.0%)	26 (65.0%)
Posttest Score	19 (47.5%)	16 (40.0%)	5 (12.5%)

Table 3. Mean pretest and posttest scores for health education

Category	Mean +- SD	Median (min-max)	Delta Score Analysis (P-Value*)
Pretest on Health Education	5.23 ± (1.441)	5.00 (3 - 8)	0.000
Posttest on Health Education	7.13 ± (1.265)	7.00 (4 - 9)	
Delta on Health Education	1.90 ± (1.692)	2.00 (-2 - 6)	

*Paired Sample T-Test with $p < 0.05$ was considered statistically significant

Table 4. Results of Education Level Analysis with Health Education Scores

Education Level	Health Education Pretest		Health Education Posttest		Health Education Delta Score	
	Median ± (min-max)	P-Value**	Median ± (min-max)	P-Value**	Median ± (min-max)	P-Value*
JHS**	5.00 (3 - 7)	0.371	8.00 (6 - 9)	0.229	3.00 (0 - 6)	0.086
SHS***	5.00 (3 - 8)		8.00 (4 - 9)		2.00 (-2 - 5)	

* Kruskal Wallis; ** Junior High School; *** Senior High School

slides in this study can deepen the material discussed because this direct delivery can occur through two-way communication so that the material giver can directly know the response of the research subject and the subject himself can use almost all of his senses well. It is known that 13% of knowledge is obtained from the insights of hearing and 35-55% from the wisdom of hearing and sight.[14]

Then, the selection of media in PowerPoint is considered the most suitable by looking at the research subject. Powerpoint media is more effective than other media, such as leaflets and videos.[12,15] Media PowerPoint has several advantages, such as an attractive presentation because of games of colors, letters, animations, animated pictures, and photos. This can further stimulate the subject/target to find more information about the teaching materials in the information messages.[15]

In addition to delivering material, in this educational method, practice is carried out guided by the facilitator. This is in line with the opinion of Susilowati (2016) in her theory regarding the cone of experience that individuals will increasingly remember a message if they go through the stages of reading, listening, viewing pictures, viewing films and demonstrations, engaging in discussions, presenting presentations, conducting simulations and working on the real thing. In this process, the individual proceeds in four stages: verbal, visual, involved, and acting. Media presented verbally and visually is considered the most effective by 6x in stimulating personal understanding.[16]

The level of education doesn't affect the students' knowledge level; this is positive because all groups can accept the material. With this increase in learning, it is hoped that the Health Santri Cadres we have trained can become pioneers and drivers in assisting in cases of injury in the surrounding environment.

The limitation of this study is that we didn't conduct validity and reliability testing for the pre and post-test. Therefore, we didn't know how precise and accurate the question was to describe the result of the intervention. Also, the interval between pretest and posttest is relatively short, we didn't know if our intervention has entirely been accepted and understood by the cadres.

CONCLUSION

After receiving health education, the level of knowledge of the Assalafiyyah II Mlangi IBS students changed. Therefore, education has proven effective in increasing knowledge of HSCs in Assalafiyyah II Mlangi IBS.

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CONFLICT OF INTERESTS

There is no conflict of interest to declare.

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AUTHOR CONTRIBUTION

FFF, I, WE, SW, NZA, HTR, HIK, RM and designed the study. FFF, I, WE, SW, NZA, were responsible for data curation. FFF and I analyzed and interpreted the data. HTR, HIK, and RM acquired financial support for the study. WE, SW, and NZA conducted the study and collected the data. FFF, I, WE, SW, NZA designed the methods and developed the statistical models. FFF, HTR, HIK, and RM managed and coordinated study activities. FFF, HTR, HIK, and RM supervised programming of the statistical analyses. All authors critically reviewed and revised the draft of the manuscript. All authors have seen and approved the final version. The corresponding author had full access to all data and the final responsibility to submit for publication.

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