The Influence of Health Education & Training on Knowledge and Skills of KSR Students in Sprain & Strain First Aid Using the RICE (Rest, Ice, Compression, Elevation) Method in Samarinda

Ulfa Mawarda [1], Misbah Nurjannah[2]

[1]S1 Nursing Study Program, Muhammadiyah University of East Kalimantan, Indonesia

[2] S1 Nursing Study Program, Muhammadiyah University of East Kalimantan, Indonesia

Ulfamawarda105@gmail.com

Phone: +62 8226 6037 743

Abstract: Sprain is an injury that occurs in the ligaments and strains are injuries to muscles and tendons. Sprains and strains occur as a result of strenuous daily activities, or during sports, if not treated seriously, appropriately and correctly can cause severe injury, disability, and can even lead to death. So the need for knowledge and skills in the Prevention of injury first aid so as to minimize the occurrence of injury. This study aims to analyze the effect of providing health education and training on the knowledge and skills of KSR students in first aid sprain (sprain & strain) with the RICE method in Samarinda. The design of this study is a quasi experiment with one group pretest-posttest approach. The sample in this study amounted to 72 respondents using simple random sampling. Data collection using questionnaires and observation sheets. The level of First Aid knowledge of sprains (strains & strains) with the RICE method before health education was obtained by 29 students 40.3% categorized as less and after an increase of 34 students 47.2% in the good category. As for the level of first aid skills sprains (strains & strains) with the RICE method before training obtained the majority of 39 students 54.2% categorized sufficient and after an increase of 42 students 58.3% categorized good. So it can be concluded that there is an influence of health education & training on the knowledge and skills of KSR students on first aid for sprains (strains & strains) with the RICE method in Samarinda.

Keywords: Sprain and Strain, student, Ligament, Tendon.

1. Introduction

Sprains are injuries that occur as a result of excessive strenuous activity, or while exercising (Meikahani & Kriswanto, 2015). Sprains occur in the area of connective tissue that connects muscles and bones, usually ordinary people know them as sprains or sprains. According to Van Mechelen sprains are known as sprains and strains. Sprains are injuries that occur in the ligament area, while strains are injuries that occur in the muscle and tendon area. Some signs that can be seen when a person experiences a sprain injury and strain include inflammation of the injured body area such as, rubor (reddish inflammation), tumor (there is swelling), heat (increased temperature or heat), dolor (pain), functiolaesa (decreased function of movement) (Arovah, 2009).

Based on data from the United States and the United Kingdom, it is estimated that every year 2 million cases of sprain and strain injuries are found, and are the leading cause of death, accidents (Febrina, 2021). About 40% of sprains and strains occur as a result of doing daily activities and exercising. For the prevalence of sprains and strains is higher and is often found in the age group under 24 years (Maysaroh, 2022). In indonesia alone, the prevalence of

injury was around 9.2% in 2018. While East Kalimantan ranked 8th or about 10.9% of injury cases, with sprains/sprains 33.10%. In Samarinda, the prevalence of the most injured occurs at the age of 15-24 years or about 13.76%, with the proportion of injured body parts occurring in the upper limbs of 28.24%, and carrying limbs of 69.54% (Kemenkes RI, 2018) .

Judging from the high number of cases that occur above, if not treated seriously, appropriately, and correctly can cause severe injury, disability and can even lead to death (Syamsuddin et al., 2021). So the need for first aid training sprains in order to increase the knowledge and skills of a person in providing treatment. By providing this training, especially to ordinary people, it is expected to increase the number of people who are trained and skilled in providing first aid for sprains, so that they can become helpers in their surroundings. Therefore, the researchers argue, it is very important to teach and provide training on first aid sprains using the RICE method to minimize the occurrence of sprain and strain sprain injury cases.

According to the American Academy of Orthopaedic Surgeons in the journal Nurjannah & Astuti, (2022) to overcome sprain and strain injuries using the RICE (Rest, Ice, Compression, Elevation) method, namely by resting the injured area for less than 72 hours, then applying ice compresses to the injured area every 2-3 hours, and bandaging the injured area, and elevating the injured area higher than the heart. The use of RICE method can effectively control inflammation and inflammation (Arovah, 2009).

Based on the results of a preliminary study that was carried out on Thursday, December 29, 2022, data from Politani Samarinda students were obtained, namely regarding the knowledge and handling of sprains and strains using questionnaires, the results were obtained : about 28% of students had a lack of understanding. And 19% of students have a lack of understanding in the treatment of sprains and strains with the RICE method. Based on these problems, it is necessary to provide health education and training aimed at improving the knowledge and skills of First Aid for sprains and strains. With the provision of health education and training, students are expected to be able to help themselves and others in their scope or in the community.

2. Methods

This study is a quantitative study, using a quasi-experimental design (quasia experiment). With one group pretest-posttest approach, the sampling technique is using simple random sampling, which is about 72 respondents. The data collection used the sprain and strain first aid knowledge questionnaire with the RICE method, and observation sheets sourced from the book First Aid First Aid 5th edition (Thygerson, 2011) to measure skills. The statistical test used is the paired samples t test. This research was carried out on May 1-30, 2023 at Mulawarman University, Widya Gama Mahakam University Samarinda, Sultan Aji Muhammad Idris State Islamic University, Samarinda State Agricultural Polytechnic, and Muhammadiyah University of East Kalimantan.

3. Results and Discussion

3.1 Results

3.1.1 Univariate Analysis

Table 1. Respondent Character

Respondent Character	Total	%
Gender		
Male	22	30,6
Female	50	69,4
Agee		
15-20 Years old	39	54,1
21-25 Years old	33	45,8
Faculty		
Economics and business	13	18,1
Law	2	2,8
Cultural sciences	2	2,8
Da'wah and communication	2	2,8
Health Sciences	17	23,6
Social and Political sciences Teacher	2	2,8
training and education	5	6,9
Forestry	4	5,6
Fisheries	1	1,4
Agriculture	7	9,7
Engineering	15	20,8
Industrial technology	2	2,8
Semester		
Two	21	29,2
Four	19	26,4
Six	21	29,2
Eight	7	9,7
Ten	2	2,8
Twelve	2	2,8
P3K Training		
Ever	61	84,7
Never	11	15,3
Handled P3K		
Ever	50	69,4
Never	22	30,6
Pretest Knowledge		
Very Good	0	0,0
Good	14	19,4
Enough	21	29,2
Less	29	40,3
Very Less	8	11,1
Posttest Knowledge		
Very Good	2	2,8
Good	34	47,2
Enough	33	45,8
Less	2	2,8
Very Less	1	1,4
Pretest Skills		
Very Good	0	0,0
Good	8	11,1
Enough	39	54,2
Less	21	29,2
Very Less	4	5,6

Respondent Character	Total	%
Posttest Skills		
Very Good	9	12,5
Good	42	58,3
Enough	21	29,2
Less	0	0,0
Very Less	0	0,0

Based on the table above, it is known that male respondents are 22 (30.6%), and female are 50 (69.4%). With the age range of respondents 15-20 years amounted to 39 (54.1%), and the age of 21-25 years amounted to 33 (45.8%). Respondents came from 12 different faculties, including : faculty of Economics and business 13 (18.1%), Faculty of Law 2 (2.8%), Faculty of cultural sciences 2 (2.8%), Faculty of Da'wah and communication 2 (2.8%), Faculty of Health Sciences 17 (23.6%), Faculty of social and Political Sciences 2 (2.8%), Faculty of teacher training and education 5 (6.9%), Faculty of Forestry 4 (5.6%), fisheries faculty 1.4%), Faculty of Agriculture 7 (9.7%), Faculty of engineering 15 (20.8%), faculty of industrial technology 2 (2.8%). Respondents came from different semester levels, including : Level Two 21 (29.2%), level four 19 (26.4%), level eight 7 (9.7%), level Ten 2 (2.8%), and level twelve 2 (2.8%). It is known that the number of respondents who have attended P3K training amounted to 61 (84.7%), and never attended p3k training amounted to 11 (15.3%). While the number of respondents who had handled P3K amounted to 50 (69%), and never handled P3K amounted to 22 (30.6%). The level of First Aid knowledge of sprain and strain sprain with RICE method before the intervention was given to the respondents, namely a number of 29 (40.3%) students were categorized as lacking, and after the intervention was given about 34 (47.2%) students were categorized as good. Furthermore, for the level of first aid skills sprain sprain and strain with the RICE method before the intervention was given to the respondents, namely a number of 39 (54.2%) students were categorized as sufficient, and after the intervention was given about 42 (58.3%) students were categorized as good.

3.1.2   *Bivariate Analysis*

Table 2. Test results of *paired samples t test* knowledge

	Average	Difference	IK95%	P Value
Knowledge before health education	64,21	11,27	8,9-13,5	<0,000
Knowledge affter health education	75,49			

Based on the test data above, the results obtained p value of 0.000 < 0.05 alternative hypothesis (Ha) is accepted. There is a significant difference between the results of knowledge before and after health education for KSR students.

Table 3. Test results *paired samples t test* skills

	Average	Difference	IK95%	P Value
Skills before health education	54,17	22,50	20,4-24,5	<0,000

Skills after health education	76,67

Based on the test data above, the results obtained p value of 0.000 < 0.05 alternative hypothesis (Ha) is accepted. There is a significant difference between the results of skills before and after training for KSR students.

3.2 Discussion

3.2.1 Respondent Character

The results of the data on the characteristics of KSR students in Samarinda, the average female respondents dominate more which is about 50 (69.4%) of 72 respondents. With more age range 15-20 years old about 39 (54.1%). KSR Samarinda students who responded to this study consisted of 12 different faculties, of which about 76.4% of the respondents did not come from the Faculty of Health Sciences (non-health). With more dominated by the Faculty of engineering 20.8%, Faculty of Economics and business 18.1%, Faculty of Agriculture 9.7%. Which consists of different semester levels, including: Level Two amounted to 21 (29.2%), level four 19 (26.4%). While the number of respondents who had attended P3K training amounted to 61 (84.7%), and never attended training amounted to 11 (15.3%). Respondents who had handled P3K amounted to 50 (69.4%), and never handled amounted to 22 (30.6%).

3.2.2 Knowledge

The results of univariate analysis obtained pretest knowledge of KSR students before being given health education data obtained knowledge of respondents in the category of less that as many as 29 students (40.3%), and after being given health education posttest knowledge of respondents in both categories, as many as 34 students (47.2%). Then the results of bivariate analysis using Paired samples t test with sig.(2-tailed) <0.05 obtained p value of 0.000 or HA is accepted. There is a real difference between the results of knowledge before and after health education given to KSR students. where by providing health education to respondents can affect the level of knowledge of respondents for the better.

This is in line with research conducted by Nurjannah & Astuti, (2022) it is stated that knowledge is very closely related to education. Where health education is one of the efforts in improving the knowledge of ordinary people. In his research, it can be proven that there is an influence of health education on the knowledge of ordinary people who were initially in the less category, but after health education the level of knowledge of respondents increased, with the number of respondents who have good knowledge of 62.5% and enough 33.3%. And according to the results of statistical tests conducted obtained the results of p<0.005, that there is a difference in knowledge between before and after health education.

In Notoatmodjo, (2014) information is a data that can be obtained in various ways. Information affects a person's knowledge. Where the more the respondent receives information, the better the knowledge he has, but conversely if the respondent never or rarely gets information, then the knowledge will be less. Lack of knowledge of the respondents due to the previous respondents rarely get a stimulus to an object that can affect the level of knowledge of him. Where the level of knowledge comes from the word know "know " and this happens after a person senses a certain object.

From the explanation above, the researchers saw that the lack of information obtained by the respondents could affect the knowledge they had. This is evidenced by the previous researcher, Maysaroh, (2022) where in his research there is a significant difference between knowledge and skills before and after audiovisual media health education. There was an addition of jemulah 58 respondents out of 76, had good knowledge after the intervention with a p value of $0.000 < 0.05$ so that Ho was rejected and Ha was accepted. This means that there are differences in the level of first aid skills for sprain and strain injuries with the RICE method before and after the intervention in junior high school students.

Based on the description above, the researchers concluded that respondents experienced an increase in knowledge after being given health education. And according to the results of statistical tests conducted in get the results that after the intervention given knowledge respondents categorized well. Therefore, health education and first aid training for sprain and strain sprains with RICE method can be used as an intervention to improve student knowledge.

3.2.3 Skills

The results of univariate analysis obtained the results of pretest skills of KSR students before being given training obtained data on the skills of respondents in the sufficient category of 39 students (54.2%), and after training the results of posttest skills of respondents in both categories, namely as many as 42 students (58.3%). Then the results of bivariate analysis using Paired samples t test with GIS.(2-tailed) <0.05 obtained p value of 0.000 or HA is accepted. There is an effect of training on the skills of KSR students in first aid sprain and strain sprains with the RICE method.

This is also in line with the research of Khairunnisa & Fitriana, Fatwati, (2020) stating that the average skill before health education and training is lacking. In the research can be evidenced by the results of the knowledge of respondents before the intervention given an average value of 8.97%, and 4.97% skills. Then after the intervention, the average value of knowledge of respondents was 15.03%, and skills were 8.97% with a p value of 0.000. The researchers concluded that there is an influence of first aid health education on p3k accidents on the knowledge and skills of taekwondo members at UMP.

In the journal Maysaroh, (2022) skill is an application of knowledge so that a person's skill level is related to knowledge. Skills are practices or actions performed by participants. So that the necessary educational materials in accordance with the skills needed to add information in developing these skills. Before there is a change in behavior, a person will have a perception of what he will live, giving rise to a perception related to the level of skills obtained from the information, so that if the information received is less clear, the learning outcomes obtained are also not optimal lack or have not obtained information about first aid.

This is evidenced by research that has been done previously by Oktavian & Roepajadi, (2021) where in his research there is a significant difference between skills before and after training. With the results of the study showed the level of understanding of acute injury treatment with RICE method there are 7 (43.75%) respondents classified in the category of "very good", 8 (50%) in the category of "good", 1 (6.25%) classified in the category of "enough".

From the explanation above, the researchers argue that the respondent's skills have improved after the training. And according to the results of statistical tests conducted in get

the results that after the intervention is given the respondent's skills are categorized as good. Therefore, first aid training sprain sprain and strain with the RICE method can be used as an intervention to improve the skills or skills of students.

4. Conclusion

According to the results of research that has been conducted to the students of KSR Samarinda on the effect of health education and training on the knowledge and skills of KSR students on first aid sprain sprain and strain with the RICE method can be concluded that the level of knowledge before the intervention was given, most respondents had less knowledge as much as 29 (40.3%), and after the intervention was given most respondents experienced an increase in knowledge with a good category of 34 (47.2%). While the skill level before the intervention, most of the respondents had sufficient skills in the category of 39 (54.2%), and after the intervention, most of the respondents experienced an increase in skills with a good category of 42 (58.3%). So it can be concluded that there is an influence of health education & training on the knowledge and skills of KSR students on pertma sprain and strain relief with RICE (rest, ice, compression, elevation) method in Samarinda, before and after the intervention. As evidenced by the test results obtained pretest-posttest value of knowledge and skills p=0.000 < 0.05.

REFERENCES

Arovah, N. (2009). Diagnosis Dan Manajemen Cedera Olahraga. *Diagnosis Dan Manajemen Cedera Olahraga*, 1–11.

Febrina, A. (2021). *Ankle Sprain*. Alomedika. https://www.alomedika.com/penyakit/kedokteran-olahraga/ankle-sprain/epidemiologi

Kemenkes RI. (2018). Hasil Riset Kesehatan Dasar Tahun 2018. In *Kementrian Kesehatan RI* (Vol. 53, Issue 9).

Khairunnisa, I., & Fitriana, Fatwati, N. (2020). Pengaruh Penkes Dan Simulasi P3K Terhadap Pengetahuan dan Keterampilan Menangani Cedera Ankle Strain Pada Anggota Taekwondo. *Jurnal Keperawatan*, *September*, 5. http://journal.um-surabaya.ac.id/index.php/JKM/article/view/5221

Maysaroh, N. (2022). Perbedaan Pengetahuan Dan Keterampilan Pertolongan Pertama Cedera Sprain dan Strain Dengan Metode RICE Sebelum dan Sesudah Dilakukan Pendidikan Kesehatan Media Audiovisual Pada Siswa SMP. In *Angewandte Chemie International Edition, 6(11), 951–952.* (Vol. 5, Issue 3).

Meikahani, R., & Kriswanto, E. S. (2015). Pengembangan Buku Saku Pengenalan Pertolongan dan Perawatan Cedera Olahraga Untuk Siswa Sekolah Menengah Pertama. *Jurnal Pendidikan Jasmani Indonesia*, *11*(1), 15–22.

Notoatmodjo. (2014). Buku Pengetahuan dan Tingkatan Pengetahuan. In *Penelitian Ilmiah* (Vol. 53, Issue 9). http://repository.poltekkes-denpasar.ac.id/1066/1/BAB II.pdf

Nurjannah, M., & Astuti, Z. (2022). Pengaruh Pendidikan Kesehatan Terhadap Peningkatan Pengetahuan Penanganan Spraindan Strain(Keseleo) Pada Masyrakat Awamdi Samarinda. *Jurnal Kesehatan :Caritas et Fraternitas*, *1*(1), 19–24.

Oktavian, M., & Roepajadi, J. (2021). Tingkat Pemahaman Penanganan Cedera Akut Dengan Metode R.I.C.E Pada Pemain Futsal Yanitra FC Sidoarjo Usia 16-23 Tahun. *Indonesian Journal of Kinanthropology*, *1*(1), 55–65.

Syamsuddin, W. N., Sari, F. S., & Mardiyah, S. (2021). *Pengaruh Pemberian Pelatihan Rice Terhadap Keterampilan Penanganan Cedera Strain Pada Atlet Pencak Silat Di Sragen*. *002*.

Thygerson, A. (2011). *First Aid Pertolongan Pertama Edisi Kelima* (B. Gulli & J. R. Krohmer (eds.); kelima). erlangga.