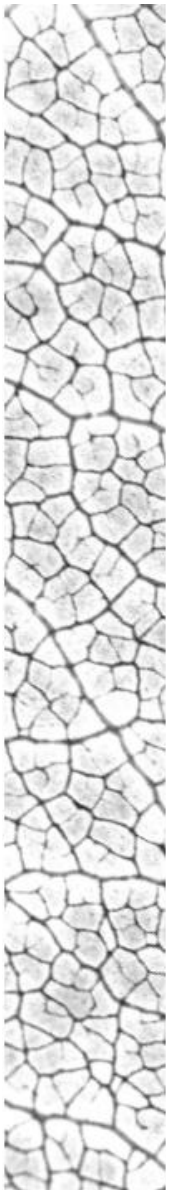

EurAsian Journal of BioSciences
Eurasia J Biosci 14, 2751-2755 (2020)

Knowledge and actions about safety in the use of backpacks not related to back pain complaints in primary school students

Tintin Sukartini [1*], Meviana Dwi Ariyani [1], Deni Yasmara [1]

[1] Faculty of Nursing, Universitas Airlangga, Surabaya, INDONESIA
*Corresponding author: tintin-s@fkp.unair.ac.id

Abstract
Most of the students take the backpack out of the safety standardization. They complain about back pain on wearing backpack. The student's lack of knowledge and adherence in the proper backpack application is causing subsequent and continuous wrong application. This study aimed to evaluate the relationship of knowledge and actions about the safety of backpack application towards complaints of pain in school children. The design used was descriptive correlative with a cross-sectional approach. The population was students of 5th and 6th grade in primary school. The total sample was 36 respondents, recruited by purposive sampling. The independent variables were the knowledge and action of safety backpack application. The dependent variable was back pain. Data were collected by using a questionnaire and observation form and analyzed by using the Spearman Rho test with a level of significance of $\alpha \leq 0.05$. The result showed that there was no significance correlation between the knowledge with the action of safety backpack application ($p = 0.726$), and no significance correlation between the action of safety backpack application with back pain ($p = 0.657$). This research can be concluded that the knowledge about backpack safety usage has no correlation with actions about safety backpack application. Actions about safety backpack application had no correlation with back pain. Nursing service institution is expected to provide health promotion about safety backpack application to reduce the incidence of back pain among the students.

Keywords: action, backpack safety, back pain, knowledge

Sukartini T, Ariyani MD, Yasmara D (2020) Knowledge and actions about safety in the use of backpacks not related to back pain complaints in primary school students. Eurasia J Biosci 14: 2751-2755.

INTRODUCTION

Bags are one of the aids in activities used by students to carry books, stationery, and other school instruments. Most students carry backpacks more than the recommended weight. Children who carry a backpack that exceeds the recommended weight have a higher risk of suffering from back pain and spinal disorders (Brackley & Stevenson, 2004). Based on the results of observations that have been made, almost all students in elementary schools in Bojonegoro use backpacks, especially students in grades 5 and 6 all use backpacks (100%, n = 39) and no students use backpacks according to standards. Large bag size, bag weight exceeds the recommended weight, the bag strap has no lining, and the bag is not equipped with a waist belt. The results of filling out the questionnaire regarding knowledge about the safety of using a backpack in primary schools showed a number of 29 students (74%) of 39 students had not good knowledge. Complaints of back pain ever felt by students as much as 50% of 39 students.

The use of a backpack that is not appropriate has a significant negative impact on school children, namely causing back pain, posture and gait changes. If the bad habit of using a backpack continuously done, it can result in irreversible changes because the ligaments and spinal bones continue to undergo a degenerative process with age (Harahap, Amin, & Effendy, 2019; Sya'bani, 2008). The recommended backpack weight is 10% to 15% of a child's weight (Brackley & Stevenson, 2004). The use of backpacks is often wrongly done because of a lack of knowledge about how to use a safe backpack in school children. So that the wrong behavior in the use of backpacks continues (Amrullah, 2011). The relationship of knowledge and actions about the safety of using a backpack with complaints of back pain in elementary school students still requires explanation. Based on this description, the study aimed to determine the relationship of knowledge and actions about the

Received: July 2019
Accepted: March 2020
Printed: August 2020

Table 1. Frequency distribution of respondent characteristics based on gender, age, and BMI

Characteristics of Respondents	Grade 5		Grade 6		Total	
	n	%	n	%	n	%
Gender						
Male	8	42.10	5	29.42	13	36.11
Female	11	57.89	12	70.59	23	63.89
Total	19	100	17	100	36	100
Age						
11 years old	13	68.42	3	17.65	16	44.44
12 years old	6	31.58	13	76.47	19	52.78
13 years old	0	0	1	5.88	1	2.78
Total	19	100	17	100	36	100
BMI						
Normal	11	57.89	16	94.12	27	75
Overweight	3	15.79	0	0.00	3	8.33
Obesity	5	26.32	1	5.88	6	16.67
Total	19	100	17	100	36	100

safety of using a backpack to complaints of pain in school children in elementary school so that there is an increase in knowledge and behavioral changes about the correct use of backpacks.

MATERIALS AND METHODS

The research design used for this research was descriptive correlative with a cross-sectional approach.

The accessible population in this study were elementary school students in Bojonegoro aged 10-12 years (students in grades 5 and 6). In this study, the sampling technique used was purposive sampling. The sample size based on inclusion and exclusion criteria and determination of the sample size formula used in this study were 36 students. The instruments for data collection in this study used questionnaires and observation sheets. The research questionnaire consisted of 3 parts, namely demographic data, knowledge about the safety of using a backpack, and complaints of back pain.

Demographic data contains three short questions about the respondent's name, date of birth, and gender. The knowledge questionnaire about the safety of using a backpack was taken from research the of Keuchler (2006); the Backpack Safety Questionnaire was then translated by researchers, which contained 12 multiple-choice questions. The material was asked about knowledge about the safety of using a backpack in accordance with the standards of the American Chiropractic Association. The back pain complaint questionnaire was taken from a research study by Ibrahim (2012) The Professor of Physical Therapy, Department of Basic Science was then translated by researchers which contained five questions. As addition to the questionnaire, researchers also observed complaints of back pain using VAS (Visual Analog Scale) to assess complaints of back pain felt by students. The action observation sheet about the use of a backpack was taken from Keuchler's (2007) research and then translated by the researchers which contained 8 items including backpack design, how to use a backpack, children's weight, and bag. The collected data were then analyzed using the Spearman Rho statistical test $\alpha \leq 0.05$.

Table 2. The distribution of respondents based on knowledge about the safety of using a backpack, measures about the safety of using a backpack, and complaints of back pain due to the use of a backpack

Characteristics of Respondents	n	%
Knowledge		
Good	12	33.33
Enough	18	50.00
Less	6	16.67
Total	36	100
Action		
Good	1	2.78
Enough	23	63.89
Less	12	33.33
Total	36	100
Complaints of Back Pain		
Severe	19	52.78
Moderate	12	33.33
Mild	5	13.89
Total	36	100

RESEARCH RESULT

Table 1 stated that the most gender distribution is female in 5th and 6th grade students. In detail, the 5th grade students were 11 respondents (57.89%) and 6th grade students were 12 respondents (70.59%). The most age distribution was 11 years old in 5th grade students there were 13 people (68.42%). The ages of 12 is a majority in 6th grade students which were also 13 people (76.47%). The most common BMI distribution was normal, which were 27 respondents (75%) the sum of the two grades.

Table 2 showed that the majority of elementary school students' knowledge about the safety of using a backpack is enough as much as 50% or 18 respondents. The majority of elementary school students actions regarding the backpacks safety application were enough as many as 63.89% or 23 respondents. The majority of back pain complaints due to wearing backpack were complaints of severe back pain in 52.78% or 19 respondents.

Table 3 showed students with good knowledge the majority has enough action that is as many as eight respondents (66.67%). Students with enough

Table 3. The relationship of knowledge and actions regarding the safety of using a backpack with actions regarding the security of using a backpack

Knowledge	Action						TOTAL	
	Good		Enough		Less			
	n	%	n	%	n	%	n	%
Good	0	0.00	8	66.67	4	33.33	12	100
Enough	0	0.00	12	66.67	6	33.33	18	100
Less	1	16.67	3	50.00	2	33.33	6	100
Total	1	2.78	23	63.89	12	33.33	36	100

Spearman Rho Test p = 0.726

Table 4. Relationship between actions regarding the safety of using a backpack with complaints of pain

Action	Complaints of back pain						TOTAL	
	Severe		Moderate		Mild			
	n	%	n	%	n	%	n	%
Good	0	0	0	0	1	100	1	100
Enough	14	60.87	7	30.43	2	8.70	23	100
Less	5	41.67	5	41.67	2	16.67	12	100
Total	19	52.78	12	33.33	5	13.89	36	100

Spearman Rho Test p = 0.657

knowledge were majority have enough action, which were as many as 12 respondents (66.67%). Students with less knowledge were majority have enough actions, which were as many as three respondents (50.00 %). Spearman Rho statistical test results obtained p-value = 0.726 (α<0.05), then H1 was rejected, which showed that there was no relationship between the knowledge of the security of using a backpack with the action about the security of using a backpack.

Table 4 showed that students with good actions majority had mild back pain complaints, namely one respondent (100%). The students with moderate actions majority had 14 severe back pain complaints (60.87%). The students with fewer majority actions had a balanced number between complaints of severe back pain and complaints of mild back pain that is five respondents (41.67%). Spearman Rho statistical test results obtained p-value = 0.657 (α<0.05), then H1 was rejected, which showed that there was no relationship between the actions regarding the use of backpacks with complaints of back pain.

DISCUSSION

Based on the results of the Spearman Rho Statistical test, there was no relationship between knowledge about the use of backpacks with measures regarding the safety of using backpacks. Some students know that backpacks that have two straps, both straps must be worn when wearing a bag, backpack straps must be soft, if the backpack is not used properly, it will make your back and neck hurt. Lack of knowledge among students is closely related to the safe use of backpacks, and the design of backpacks, how to use a backpack, how to put books in the backpack. Knowledge describes everything that is known and believed. Knowledge is the result of knowing, and this happens after people have sensed a certain object. Sensing occurs through the five human senses (Eka, Houghty, & Juniarta, 2019; Notoatmodjo, 2010).

It is illustrated that the knowledge of majority of students about wearing backpack is sufficient. Students who have sufficient knowledge of backpack safety application were found sufficiently wearing backpack safely. In the cross-tabulation table the results have shown to be correct, but the results of the Spearman test was found no correlation. Knowledge includes in the cognitive domain, which has six levels, namely knowing, understanding, application, analysis, synthesis (Notoatmodjo, 2010; Posmaningsih, Aryasih, Hadi, Marwati, & Mallongi, 2018). Application is defined as the ability to use a material that has been known or studied in a real situation or condition. Students who have good knowledge have more actions than good actions. This is because knowledge about the safety of using a backpack owned by students is not applied, or students are lazy in wearing a backpack properly.

The results showed that there was no relationship between actions regarding the use of a backpack with complaints of back pain. The measures regarding the safe use of backpacks in primary school students were found majority of sufficient. However, almost all students use the backpack wrong. The design of the backpack used mostly is two straps without a belt, the bottom line of the backpack lies under the lumbar spine, the heaviest book in the backpack is not located closest to the center of the child's gravity, the weight of the bag measured from the weight of the child minus the weight of the child and the bag is obtained almost all students carry a backpack with a weight not exceeding the recommended maximum weight which is 10-15% of a child's weight. There is only one student who carries a backpack with a weight that exceeds the recommended backpack weight namely, a male student from grade 6. Research Mahendrayani, Purnawati & Andayani (2015) and Farhood (2013) states that there is a significant relationship between bag weight with low back pain in schoolchildren. It is not in accordance with this study because of the observations of actions regarding the safety of using a backpack about the burden of

backpacks carried by the majority of students are still within the limits of the correct bag load criteria, but complaints of back pain that felt more by students are complaints of severe back pain.

Actions are taken after someone knows the stimulus, then conducts an assessment or opinion of what is known. The next process is expected to be carried out or practice what is known or acted on, which is considered good (Notoatmodjo, 2005). Other factors thought to affect back pain are age, sex, and BMI. Research by Murphy, Buckle, & Stubbs (2007) shows that the prevalence of back pain increases with age. The majority of severe back pain complaints are experienced by the age of 12 years from the age of 11 years. This is consistent with the study of Murphy et al. (2007) that the prevalence of back pain increases with age.

The results of previous studies suggest that there is a relationship between gender and the prevalence of back pain where women complain more about back pain (Korovessis, Koureas, Zacharatos, & Papazisis, 2005; Moore, White, & Moore, 2007; Sjolie, 2002). According to research by Barkhordari et al. (2013), more girls feel that their school bags feel heavy and tiring compared to boys. This is because there are differences in skeletal maturation, so it will also affect the level of fitness where the level of fitness of girls is lower compared to boys. Because boys also tend to have a higher level of physical activity compared to girls. Because of the lack of physical activity, girls tend to experience low back pain. In this study, it was found that the majority of respondents who had complaints of severe back pain were female. This is in accordance with the above research explanation that the prevalence of back pain in women more.

The BMI factor shows that children who have a high BMI value complain more about back pain (Iyer, 2001; Sheir-Neiss, Kruse, Rahman, Jacobson, & Pelli, 2003). Korovessis et al. (2005), in his research, also mentioned that children with more weight have a greater risk of back pain. In this study, respondents who had complaints of severe back pain with a high BMI were 2 out of 19 respondents who had complaints of severe back pain. From these results, the BMI factor only contributes a little in making an impact on back pain complaints. Based on the explanation in the paragraph above, other factors that influence back pain in this study are age and gender.

CONCLUSION

Based on the research that has been done and the results obtained, it can be concluded that knowledge about the use of backpacks is not related to the actions of using backpacks. This is because knowledge about the safety of using a backpack owned by a student is not practiced, or students are lazy in using a backpack properly. The act of using a backpack also has no correlation with complaints of back pain. Other factors that influence back pain in this study are age and gender.

REFERENCES

Amrullah, A. M. (2011). Insidensi dan prevalensi nyeri punggung bawah di poliklinik saraf RSUD Wonogiri tahun 2006-2007. Yogyakarta: Fakultas Kedokteran Universitas Islam Indonesia.

Barkhordari, A., Ehrampoush, M. H., Barkhordari, M., Derakhshi, F., Barkhoradri, M., & Mirzaii, M. (2013). Assessment of school backpack weight and other characteristics in elementary schools, Yazd, Iran. Journal of Community Health Research.

Brackley, H. M., & Stevenson, J. M. (2004). Are children's backpack weight limits enough?: A critical review of the relevant literature. Spine, 29(19), 2184–2190.

Eka, N. G. A., Houghty, G. S., & Juniarta, J. (2019). The Effect of Blended Learning on Nursing Students' Knowledge. Jurnal Ners, 14(3), 1–4.

Farhood, H. F. (2013). Low back pain in schoolchildren: the role of school bag weight and carrying way. J Nat Sci Res, 3(8), 156–164.

Harahap, Z. C. S., Amin, M. M., & Effendy, E. (2019). Phantom pain limb: A case report in a soldier-theory and therapy. Open Access Macedonian Journal of Medical Sciences, 7(16), 2691–2694. https://doi.org/10.3889/oamjms.2019.413

Ibrahim, A. H. (2012). Incidence of Back Pain in Egyptian School Girls: Effect of School Bag Weight and Carrying Waymu. World Appl Sci J, 17(11), 1526–1534.

Iyer, S. R. (2001). Schoolchildren and backpacks. The Journal of School Health, 71(3), 88.

Keuchler, M. (2006). Backpack safety awareness. New York : Touro College School of Health Sciences Occupational Therapy Program.

Korovessis, P., Koureas, G., Zacharatos, S., & Papazisis, Z. (2005). Backpacks, back pain, sagittal spinal curves and trunk alignment in adolescents: a logistic and multinomial logistic analysis. Spine, 30(2), 247–255.

Mahendrayani, L. I., Purnawati, S., & Andayani, N. (2015). Hubungan berat tas dengan nyeri punggung bawah pada anak sekolah umur 12-14 tahun di Denpasar. E-Medika Udayana, 4(2), 1–5.

Moore, M. J., White, G. L., & Moore, D. L. (2007). Association of relative backpack weight with reported pain, pain sites, medical utilization, and lost school time in children and adolescents. Journal of School Health, 77(5), 232–239.

Murphy, S., Buckle, P., & Stubbs, D. (2007). A cross-sectional study of self-reported back and neck pain among English schoolchildren and associated physical and psychological risk factors. Applied Ergonomics, 38(6), 797–804.

Notoatmodjo, S. (2005). Promosi kesehatan teori dan aplikasi. Jakarta: Penerbit Rineka Cipta.

Notoatmodjo, S. (2010). Ilmu perilaku kesehatan. Jakarta: Penerbit Rineka Cipta.

Posmaningsih, D. A., Aryasih, G. A. M., Hadi, M. C., Marwati, N. M., & Mallongi, A. (2018). The influence of media booklet in behavior change of waste management in elementary school students, South Denpasar, Bali. Indian Journal of Public Health Research and Development, 9(8), 1506–1511. https://doi.org/10.5958/0976-5506.2018.00946.4

Sheir-Neiss, G. I., Kruse, R. W., Rahman, T., Jacobson, L. P., & Pelli, J. A. (2003). The association of backpack use and back pain in adolescents. Spine, 28(9), 922–930.

Sjolie, A. (2002). Psychosocial correlates of low-back pain in adolescents. European Spine Journal, 11(6), 582–588.

Sya'bani, P. D. (2008). Hubungan Tingkat Pengetahuan Tentang Backpack Safety Terhadap Keluhan Nyeri Punggung pada Siswa Kelas 5 di Kelurahan TegalPanjang Garut.