The Relationship between the Weight of a Backpack and Lowback Pain in Children Ages 10 to 12 Years Old

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Abstract

Every parent expected their child growth and develop well. Most of the children using bag for bring their school necessities every day. It needs attention because if they are using a backpack more than 10 percent of their weight, it can have a negative impact for them. Heavy backpack causes the child to bend forward for support the weight on their back. it will change the curvature of the spine and will cause back pain. The purpose of this study is to determine the relationship between the weight of backpack and lowback pain in children ages 10 to 12 years old. A descriptive correlation study was applied to achieve the purpose of this study. The participants were 75 children from elementary school in Bahal Batu Barungun tengah in North Sumatra, Indonesia. Data was collected from Februari to June 2018. Digital scale was used measured the weight of backpack and Lowback pain was assessed using validated questionnaire. The association of lowback pain and back pack weight was analyzed using Chi-square test. The results shown that majority of weight of children ages 10 to 12 years old is heavy (68.0%) and lowbackpain in children ages 10 to 12 years old (80%). There is relationship between the weight of a backpack and low back pain in children ages 10 to 12 years old (p <0.05). Suggestion for all parents to check the weight of a backpack their children bring to school.

Keywords: Weight of Backpack, Lowback Pain, 10 to 12 years old.

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Introduction

Every parent expected their child growth and develop well. Most of the children using bag for bring their school necessities every day. The current trend of schools, they are often giving homework, and assignments to the children that it's impact on the abundance of material that they have to carry to school. From the existing bag, the type of backpack is widely using for the elementary school students (Lisanti, et al., 2017). Bauer (2007) reported that about 40 million children in the United States using the backpacks to carry their goods, whereas in Kuta, Indonesia, 90% of elementary school students using backpacks (Dewantari, et. al, 2017). Though backpacks is popular for elementary school students but, it can cause some problems and have negative impact if their are not using it appropriatly. Such as if they are using backpacks are too heavy. Books, as the main causes of the burden of the bag is filled with many additional since items ranging from the provision of lunch, equipment their bags to get heavy to heavier (Lisanti, et al., 2017). American Occupational Therapy Association (AOTA) (2014) recommends the load of luggage may not exceed 10% of the total body weight of children. When someone is carrying a bag with a weight in excess of 10% of their weight or heavy of backpack, then head will be leaning forward to maintain the posture of their body. If these changes are preserved in a long time, then it will change the curvature of the spine and will cause back pain (Bauer as cited in Hendri, et al., 2014)

The lower back pain on children more dangerous than adult. Lower back pain in children have greater chances to serious disease, such as the child will complain about pain on the back, weakness, sleeping problem after using backpack. This condition as underlying that lower back pain symptoms need to identified quickly and therapy to prevent their condition from becoming more severe (Rodriguez, et al., 2014).

A preliminary study conducted on students from the ages 10 to 12 years old in Bahal Batu, Barumun Tengah district, Padang Lawas Regency, North Sumatra Province, Indonesia. Interview were conduct on 10 students who use backpacks to carry supplies to school, obtained 6 out of 10 students complained about lower back pain.

Methods

Research design was cross-sectional design, with a descriptive correlation study. The population of this study was the students who were studying in SDN 0213 Bahal Batu Barumun Tengah class IV, V, and VI, North Sumatra, Indonesia. The sample was 75 students who met the inclution criteria. The inclution criteria were (1) the students are willing to

become respondents, (2) the students wear a backpack brought to school by them selves at least for one year. The exclution criteria were (1) the students who are not attend in the class due to illness, permission, etc., (2) students use a backpack with two straps, and (3) students with spinal deformities. This study received the approval from the committee of ethical medical research at the Medical Faculty, Muhammadiyah University no 120/KEPK/FKUMSU/2018. After obtaining the permission letter granted by the head of elementary school in bahal batu barungun tengah, Indonesia, the researcher met with the head of elementary school to explain the objective and asked for the name list of students base on the inclution criteria. About 75 students were include in this study. The students who agree and willing to participate in this study were asked to fill the questionnaire. Low back pain questionnaire by Izzat, M (2013) which explore about lowback pain such as pain on the back area, weakness, and sleeping problem, etc, and digital scale was use to explore the weight of backpack in children ages 10 to 12 years old. Data was collected from Februari to June, 2018. Descriptive statistic was used to analyze demographic data such as gender, age, and class. The weight of backpack and lower back pain on children ages 10 to 12 years old were analyzed by using frequency and percentage. Chi-square was used to examine the relationship between the wight of backpacks and lower backpain in children ages 10 to 12 years old.

Results

Demographic Characteristic

In this study, demographic characteristics consist of gender, age, and class. The result mainly from 75 students, most of the students are women (61.3%), ages 10 years old (34.7%) and 11 years old (34.7%), and class V (42.7%) (see Table 1).

Table 1. Frequency and Percentage of Respondents Characteristic

The characteristics of respondent	*n*	%
Gender		
Women	46	61,3
Male	29	38,7
Age		
(M=10,96, SD=0,813, min-max=10-12 tahun)		
10 years old	26	34,7
11 years old	26	34,7
12 years old	23	30.7
Class		
IV	21	28,0
V	32	42,7
VI	22	29,3

The weight of a backpack on children ages 10 to 12 years old.

The study findings revealed that majority of weight of a backpack on children is heavy (68.0%) and the majority of their ages are 10 years old (32.0%) (table 2).

Table 2 The Weight of a Backpack on Children Ages 10 to 12 Years Old

The Weight of a Backpack	*n*	%
Light	24	32,0
10 years	2	2,7
11 years	10	13,3
12 years	12	16,0
Heavy	51	68,0
10 years	24	32,0
11 years	16	21,3
12 years	11	14,7

About 80% of children ages 10 to 12 years old have low back pain and the majority of their ages are 10 years old (30.7%) (table 3).

Table 3. Lowback pain on Children Ages 10 to 12 Years Old

Lower back pain	*n*	%
No Pain	15	20,0
10 years old	3	4
11 years old	5	6,7
12 years old	7	9,3
Pain	60	80,0
10 years old	23	30,7
11 years old	21	20,0
12 years old	16	21,3

The relationship between the weight of a backpack and low back pain on children ages 10 to 12 years old.

In this study, there is a relationship between the weight of a backpack and low back pain on children ages 10 to 12 years (p=0.00, <0.05).

Table 3 The relationship between the weight of a backpack and low back pain on children ages 10 to 12 years old

		Lower back pain	
		Pain	No Pain
Weight of Backpack	Light	20.0% (15)	12.0% (9)
	Heavy	60.0% (45)	8.0% (6)

Discussion

Pascoe, et.al as cited in Fathoni (2014) states that in children aged 10 to 12 years old, there is a change in the trunk to the front of the spine if the burden on the back of the child exceeds their weight. Heavy of weight of a backpack is associated with changes in posture as a cause of lower back pain (Fathoni, 2013). In this study, majority of weight of backpack on children is heavy. The result of this study is similar to Dumandor, et al., (2015) and Dewantari, et al. (2017). The researcher argue that the participants have to take part in extracurricular activities so that will increase luggage of backpack weight of children

The majority lowback pain on children is pain (80%) and their ages are 10 years old (30.7%). This result study similar to Rodriguez, et al., (2011). The researcher argued that majority of responden ages in this research is 10 years old. They are the youngest in the stage of growth develope in this group respondent and the mass of their spine is not yet strong. Risk factors that affect low back pain are age, body mass index, the habit of using heavy of backpacks weight, and pathological conditions (LeMone, et. al, 2016). Lowback pain on this respondent related to their age.

According to AOTA (2014) the innate weight burden on children should not exceed 10% of their body weight. Things can happen if it exceeds the predetermine standard, there will be a negative impact, such as pain in the lower back area of the children. As was finding in this study where the weight of the backpack correlated with back pain on the children.

Conclusion and Implications

Majority of the weight of a backpack on children ages 10 to 12 years old is heavy. Majority of children ages 10 to 12 years old have lowback pain. There is a relationship between the weight of a backpack and lowback pain on children ages 10 to 12 years. This

result study can used as a reference for all parents who have children using backpack to consider the burden of backpack that their children bring to school and for the goverment need to gives support the instution about locker for elementry students.

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