The Use of Modified Cervical Colar in Reducing Neck Pain

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ABSTRACT

Background: One of the conditions of pain in the neck area where there is a stiff neck, so sometimes there is pain radiating from the shoulder to the hand, the symptom is often called cervical syndrome. This condition occurs because the vertebral root is compressed for a long time in the use of activities. In the long term, the pain can even radiate to both shoulders and even to the arms of the arch, this situation will result in abnormal and rapid fatigue. According to studies conducted by researchers, this situation may be prevented by giving a special cervical collar design to Tafidz Ouran students. In this study, it will be investigated how effective the special collar model is to overcome the problems/prevention of cervical syndrome for Tafidz Ouran students in Karanganyar. The purpose of this study was to determine how effective a special cervical collar design is to reduce pain in cervical syndrome.

Subjects and Method: This research is a Randomized Controll Trial (RCT) where in this study before being randomized in determining the control and treatment groups, matching was done first. In the control group in this study were students who used regular collars (collars sold in the market) and in the intervention group were given special collars. The sample in this study was the students of the Tahfidz boarding school in the Karanganyar area as many as 160 students who experienced cervical syndrome. Each group in this study amounted to 80 students. The sampling technique was simple random sampling. The variables in this study, the dependent variable is the cervical syndrome condition of the Tafidz Quran students and the use of a special cervical collar model as the independent variable. Analysis of the data using the Independent samples t test if the data is normal, and using the Mann Whitney test if the data is not normal.

Results: After the intervention, it was shown that pain in the special cervical collar group (mean = 2.51; SD = 0.50) was lower than that in the regular collar group (mean = 5.50; SD = 0.59) and was statistically significant (p value = 0.000).

Conclusion: The use of a special cervical collar is better than a regular cervical collar to reduce neck pain.

Keywords: cervical syndrome, cervical collar, special cervical collar

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BACKGROUND

Cervical syndrome or often known as neck pain and neck pain are complaints that are often encountered in clinical practice. The incidence of cervical syndrome has a higher percentage in office workers who are often in front of computers, the teaching profession, urban communities and in higher economic groups. The percentage of cervical pain in this population group was 48.7% and spinal pain was 45.6% (Silvia et al., 2017; Hoy et al., 210; Yue et al., 2012).

The incidence of neck pain increases with age, ie between the ages of 45-60 years

and is higher in women than men. Cervical syndrome occurs as a result of pathological processes in the soft tissues, but is more common due to conditions associated with the cervical spine. Sources of neck pain related to the cervical spine include cervical spondylosis, radiculopathy caused by compression of the nerve roots, myelopathy due to compression of the spinal cord in the cervical region, injury and irritation of the paraspinal muscles, trauma, tumors and systemic disorders (Iheukwumere and Okoye, 2014; Lv et al., 2018).

One of the conditions of pain in the neck area where there is a stiff neck, so that sometimes pain radiates from the shoulder to the hands, the symptom is often called cervical syndrome (Stoppler, 2011). This condition occurs in a series of disorders caused by changes in the cervical spine and the soft tissues that surround it, these disorders cause pain, headaches because the vertebral column is compressed for a long time in the use of activities. In the long term, the pain can even radiate to both shoulders and even to the arches of the hands (Mhicelson et al., 2000) this situation will result in abnormal and rapid fatigue.

Handling the problem of neck pain can be done by providing exercise therapy and the use of assistive devices as therapy. Exercise therapy is body movement, posture or physical activity that is carried out in a systematic and planned manner in order to provide benefits to improve, restore and increase physical function. Exercise therapy can also prevent or reduce health-related risk factors (Kisner and Colby, 2016). The use of therapeutic aids such as cervical collar, neck collar or cervical spine mobilization can have an effect on increasing functional activity and reducing pain (Sari, 2017).

The function of giving this collar is as a neck therapy tool in reducing disturbances in neck control. In addition, it is also a means of supporting the neck and head so that it can limit the movement of looking down or looking up which can cause discomfort if the position is carried out for a long time (Widodo, 2014). According to studies conducted by researchers, this situation may be prevented by giving a special collar to Tafidz Ouran students.

To examine how effective the role of the special collar model is in overcoming problems/prevention of cervical syndrome for Tafidz Ouran students in Karanganyar, the school or boarding school can record some of its students who have complaints of neck pain and immediately do prevention with exercise and evaluation of learning positioning and can work together with health workers, physiotherapists and orthotic prosthetics, together with other rehabilitation teams for the OP profession, will find a suitable collar model as a head and neck support or support to prevent injury and possible cervical syndrome.

SUBJECT AND METHOD

1. Study Design
This research is a Randomized Controll Trial (RCT) study where in this study prior to randomization in determining the control and treatment groups, matching was carried out first. This study aims to determine the effectiveness of a special collar as a therapy tool in cervical syndrome pain.

2. Population and Sample
The population in this study were all students in the Tahfidz boarding school in the Karanganyar area. The sample in this study were the students of the Tahfidz boarding school in the Karanganyar area who experienced cervical syndrome, as many as 160 students. The division of groups was carried out by simple random sampling technique and the number of groups in the special cervical collar was 80 students and

the normal cervical collar group was 80 students.

3. Study Variable

The variables in this study, the dependent variable is the cervical syndrome condition of the Tafidz Quran students and the use of a special cervical collar model as the independent variable.

4. Operational Definition of Variable

Cervical syndrome is a condition of pain in the neck area which is caused by many factors, one of which is an unergonomic position. The instrument used to measure pain in cervical syndrome is the Visual Analog Scale (VAS) which uses a score from 1 to 10. The variable measurement scale is an interval scale.

A cervical collar is a support device that is used to regulate head and neck movements so as to reduce discomfort or pain due to non-ergonomic positions. The cervical collar in this study used an ordinary cervical collar and a special cervical collar. The difference is that in the special collar there is a button component to adjust the user's comfort when used. The use of this collar is during the activity of reading the Koran or murojaah and using it for 4 weeks.

5. Data Analysis

Analysis of the data using the Independent samples t test if the data is normal, and using the Mann Whitney test if the data is not normal.

RESULTS

1. Sample Characteristics

The characteristics of the sample in this study are divided into the characteristics of the categorical data sample and the continuous data sample. In this study the characteristics of categorical data in the form of gender. Where the sample in this study as many as 160 students are male. Meanwhile, the characteristics of continuous data include the age of students and cervical pain. The results of descriptive statistics for the characteristics of continuous data samples can be seen in Table 1 presented as follows:

Table 1. Sample Characteristics

Variables	N	Mean	SD	Min.	Max.
Age (year)					
Regular collar group	80	16.21	0.59	15	18
Modified collar group	80	16.22	0.53	15	18
Pain level					
Regular collar group	80	5.50	0.59	4	6
Modified collar group	80	2.51	0.50	2	3

Table 1 shows that after the intervention the average age in the two groups was almost the same, namely 16.21 years which was included in the adolescent age group. Meanwhile, the average pain in the ordinary collar group is 5.50, which is included in the moderate pain group, and 2.51 in the special collar group which is included in the mild pain group.

2. Bivariate Analysis

The results of the normality test using the Kolmogorov Smirnov test showed that the control group was with students with regular collars and in the intervention group, namely students with special collars, the data was not normally distributed, with p value of both groups was <0.001.

Table 2. Mann Whitney test (N=160)

Pain level	Mean	Z	p
Regular neck collar	5.50	-11.26	<0.001
Modified neck collar	2.51		

The results of the Mann Whitney test on cervical pain syndrome obtained a z-value of -11.26 with a mean difference of 2.99 and a p value of <0.001, it can be concluded that there is a difference in the use of a regular collar with a special collar for cervical pain in students and the results are statistically significant.

DISCUSSION

This study was conducted to determine the effect of using a cervical collar prototype on cervical syndrome pain. The data in this study are primary. The data obtained are based on direct expressions from research subjects using a measuring instrument in the form of VAS before and after treatment. The results showed that there was a difference between the use of a special cervical collar and a regular collar for students, which was -11.28 and statistically significant (p= 0.000).

With the results of this study, it proves that this tool helps to withstand the weight of the head which burdens the work of the muscles around the neck. A cervical collar is a neck support device that functions to withstand the physical forces of the neck muscles and neck bones and head so that they are at the lightest load point so that comfort can be produced. The use of cervical collars for boarding students who have long activities using their necks can cause pain. So that the pain does not get worse, apart from doing prevention with exercise and evaluating learning positioning, one of the therapies that can be used is the use of a special collar that is suitable as a head and neck support or support to prevent cervical syndrome.

This study was conducted to obtain a cervical collar prototype to reduce cervical syndrome pain. With the use of a special cervical collar, it can reduce pain in students of the Tahfidz Quran Islamic Boarding School in Karanganyar Regency.

CONFLICT OF INTEREST
There is not conflict in this study.

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