Original Research

Study Of Anthropometry, Sedentary Lifestyle, And Neck Disability Of Physiotherapy Students In Bali

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ABSTRACT

Background: The COVID-19 pandemic situation has caused a crisis that affects all aspects of education. Students conduct online learning in front of laptops for a long enough duration. There is a potential for changes in anthropometric measurements (body size) during the pandemic and the possibility of a decrease in neck function. This study was conducted to determine the descriptive data of anthropometric, level of sedentary lifestyle, and neck functional ability of physiotherapy students at the Faculty of Medicine, Udayana University during the Covid-19 pandemic.

Methods: This study is an analytic observational study with cross-sectional method. The research subjects were 156 people consisting of physiotherapy students from Udayana University who had filled out the research questionnaire that had been provided.

Results: In male respondents, it was found that 78.4% (n=29) had a normal waist circumference (≤90cm) while for female respondents 80.7% (n=96) had a normal waist circumference (≤80cm). The results of the body mass index found that 48.1% (n=75) were classified as normal. A total of 58.3% (n=91) of respondents had non-sedentary behavior. In the assessment of the level of neck disability, respondents in the category of no disability were 57.7% (n=90).

Conclusion: Based on the results and discussion, it can be concluded that waist circumference for both men and women is dominated by the normal category, sedentary behavior by the non-sedentary category, and neck functional ability by the non-disabled category.

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INTRODUCTION

The Covid-19 pandemic began in 2019 in Wuhan, Hubei Province, China. A pandemic is a large-scale outbreak of an infectious disease that can increase morbidity

and mortality over a large geographic area and cause health, economic, social and political problems. Currently there are 133 million cases of Covid-19 infection worldwide and 1.5 million cases in Indonesia (Satgas Covid-19, 2021; World Health Organization, 2021). The pandemic situation has caused a crisis that affects all aspects of human life, including education.

During the pandemic, the government limited all face-to-face learning to online learning within a certain period of time. Students conduct online learning in front of laptops for a long enough duration. There is a potential for changes in anthropometric measurements (body size) during the pandemic and the possibility of a decrease in neck function (Maramis & Tawaang, 2021). The pandemic situation that requires the whole community, including students to stay at home, causes a lack of physical activity, which makes them prone to obesity and affects the measurement of their arm circumference, abdomen, and body weight (Mustofa et al., 2021).

The student's passive position causes the neck to be compressed due to the lack of stretching that occurs. Neck pain is a complaint that is often felt by students. This complaint arises because students must continue to use laptops for the learning process and are triggered by non-ergonomic postures, static positions on the neck for a long time, and movement or pressure on the neck muscles (Motimath & Ahammed, 2017).

The age group of 20-35 years has a prevalence of 66% experiencing neck complaints. Pain does not occur as a result of an accident but rather a factor from work and the duration of working too long in front of a laptop/computer. The incidence of neck pain increases with age and continuous computer/laptop use for more than 4 hours a day (Situmorang et al., 2020). Risk factors associated with neck pain are incorrect posture, long working hours, and neck muscle tension.

In addition, a study showed that there was a relationship between the level of body mass index (BMI) and physical activity in VO2 max. Vo2max describes as the maximum amount of oxygen that can be consumed by the body and is also most often used to measure oxygen transport as well as an individual's cardiorespiratory capacity at a given level. The higher a person's BMI, the lower his VO2 max, as well as the higher a person's physical activity, the higher his VO2 max. Thus, it is necessary to measure BMI and physical activity levels that are assessed from the sedentary lifestyle carried out by students during the pandemic (Lestari et al., 2020).

Students are also affected by the Covid-19 pandemic. Activities carried out at home are certainly different from those carried out usually at school or campus. Changes in physical activity levels during the pandemic may play a role on the anthropometric scale and functional ability of the neck. Therefore, this study was conducted to determine the anthropometric description, level of sedentary lifestyle, and neck functional ability of physiotherapy students at the Faculty of Medicine, Udayana University during the Covid-19 pandemic.

MATERIALS AND METHOD

This study is a descriptive observational study with cross-sectional method to determine a descriptive data of anthropometric, sedentary lifestyle levels, and neck functional abilities in physiotherapy students at Udayana University. The study was conducted from July to August 2021 and data collection was carried out online. Subjects in this study used a total sampling technique with research participants coming from

semester 3, semester 5, and semester 7 undergraduate physiotherapy study programs at Udayana University as many as 156 people.

This study included informed consent and the principles stated in the Helsinki declaration have been fulfilled.

The variables in this study include:

a) Body weight was measured using a scale and measured using units of kilograms (kg) (Antini, 2018).

b) Height was measured using a microtoise measuring instrument with an accuracy of 1 cm. Measurement of height only requires equipment in the form of a floor with a flat surface for standing, when using a wall as a supporting medium, the wall surface is not wavy and vertical. It can stand upright with heels, gluteal, pelvis and back against the wall. The measurements were taken without wearing footwear, standing upright with the back against the wall, the chin bent slightly downwards, then the microtoise was placed or pressed horizontally above the head (Rahayu, 2018).

c) Body mass index is calculated by dividing weight (in kg) by height (in m) squared (Rahayu, 2018). BMI in the Asia-Pacific guidelines is classified as follows: underweight (<18.5), normal (18.5 – 22.9), overweight (23 – 24.9), and obese (≥25) (Lim et al., 2017).

d) Waist circumference was measured using a tape measure with an accuracy of 1 cm and is measured between the iliac crest and the XII rib at the smallest circumference. The International Diabetes Federation determines obesity criteria based on waist circumference in the following categories: female (≥80 cm) and male (≥90cm) (Yuhara, 2016).

e) Sedentary behavior is an activity that refers to all types of activities that are carried out outside of bedtime, with very few calorie output characteristics, namely <1.5 METs (P2PTM Kemkes, 2019). In measuring sedentary behavior, measurements based on ACSM can be used with classification if the respondent participates in at least 30 minutes of physical activity in moderate intensity, at least three days/week for at least the last three months then it is classified as non-sedentary behavior and vice versa (ACSM, 2019).

f) Neck functional ability is the ability to perform neck movements which include flexion, extension, lateral flexion, and rotation. Neck function ability is strongly influenced by joint range of motion, tissue flexibility, and the presence of pain (Trisnowiyanto, 2017). Neck functional ability can be measured using a Neck Disability Index (NDI) questionnaire which has 10 questions with the following interpretations: no disability (0 – 4), mild disability (5 – 14), moderate disability (15 – 24), severe disability (25 – 34), and complete disability (≥35). The measurement of neck disability in this study used a valid and reliable Indonesian version of the NDI questionnaire (Putra et al., 2020).

The data were analyzed using the SPSS application to obtain the mean, standard deviation, and median values for the variables of age, body weight, and height. Meanwhile, the variables of waist circumference, body mass index, sedentary lifestyle, and neck disability index were classified by category with ordinal data.

RESULTS

Based on the research, the following results can be obtained:

Table 1. Subject Characteristics

Variables	n	Mean ± SD	Median
Gender	-	-	-
Male	37	-	-
Female	119	-	-
Age	-	19.88±0.96	20
Body weight	-	57.41±13.67	55
Height	-	162.26±7.24	160,25

Based on Table 1. the respondents obtained were 156 people, consisting of 37 males and 119 females. The age of the respondents is in the range of 18-23 years. The average body weight of the respondents was 57.41±13.67 kg. The average height of the respondents was 162.26±7.24 cm.

Table 2. The Distribution of Waist Circumference, Body Mass Index, Sedentary Lifestyle Level, and Level of Neck Disability

Variables	N	Percentage
Waist circumference		
Male		
≤90cm	29	78.4%
>90 cm	8	21.6%
Female		
≤80cm	96	80.7%
>80 cm	23	19.3%
Body Mass Index		
Underweight	35	22.4%
Normal	75	48.1%
Overweight	20	12.8%
Obese	26	16.7%
Sedentary Lifestyle		
Sedentary	65	41.7%
Non-sedentary	91	58.3%
Neck Disability Index		
No disability	90	57.7%
Mild disability	63	40.4%
Moderate disability	3	1.9%
Severe disability	0	0.0%
Complete disability	0	0.0%

The results of the study in Table 2. show the distribution of waist circumference in female and male respondents, body mass index, sedentary lifestyle level, and level of neck disability. In male respondents, it was found that 78.4% (n=29) had a normal waist circumference (≤90cm) while 21.6% (n=8) had an abnormal waist circumference (>90cm). Furthermore, for female respondents, 80.7% (n=96) had a normal waist

circumference (≤80cm) and 19.3% (n=23) had an abnormal waist circumference (>80cm).

The results of the body mass index (BMI) of respondents have been classified using the Asia Pacific guidelines. It was found that 22.4% (n=35) of the respondents were classified as underweight, 48.1% (n=75) were classified as normal, then 12.8% (n=20) were classified as overweight, and 16.7% (n=26) were classified as obese. A total of 58.3% (n=91) of respondents had non-sedentary behavior and 41.7% (n=65) of respondents had sedentary behavior.

In the assessment of the level of neck disability, respondents in the category of no disability were 57.7% (n=90), respondents with mild disability were 40.4% (n=63), and respondents with moderate disability were 1.9% (n=3). Meanwhile, respondents with severe disability or complete disability were not found (n=0).

DISCUSSION

This study used a cross-sectional design which aims to determine the anthropometric description, sedentary lifestyle, and neck functional ability of physiotherapy students at the Faculty of Medicine, Udayana University during the Covid-19 pandemic. This study followed by 156 students as respondents, consisting of 37 male students and 119 female students.

Based on the results of waist circumference measurements, it is known that as many as 21.6% (n = 8) male students have an abnormal waist circumference (> 90cm). Meanwhile, for female students, 19.3% (n=23) had an abnormal waist circumference (>80cm). This abnormal measurement result can be attributed to the Covid-19 pandemic, which has forced students to study online and requires them to keep their distance from each other and stay at home. This is what slowly turns into a daily habit, causing sedentary behavior (lack of movement) that can have an impact on health (Bulan, 2021).

Based on the results of the study, sedentary behavior was carried out by 41.7% of respondents, namely as many as 65 students. Sedentary behavior can affect a person's waist circumference. Waist circumference is an accurate method for measuring nutritional status and body fat distribution (Ridho, 2019). Physical activity has an important role in body fat distribution, using abdominal fat as a result of adipose tissue redistribution. Sedentary behavior that is identical to less physical activity causes the fat stored in the tissue to increase (Ra Pati Tiala et al., 2013). Therefore, the results of waist circumference measurements can be influenced by a person's physical activity. This is also supported by previous research which describes a very strong, significant, and directional relationship between BMI and the percentage of total body fat (p < 0.05) and r = 0.882 (Lestari et al., 2020).

The results of the study on sedentary behavior showed that 58.3% (n=91) of respondents had non-sedentary behavior and 41.7% (n=65) of respondents had sedentary behavior. This is in contrast to other research which suggests that low physical activity occurs in many Indonesians during the Covid-19 pandemic (Bachtiar et al., 2020). The physical distancing practices required during the Covid-19 pandemic limit people's activities so that there are fewer opportunities to be physically active, especially in walking activities or cycling. However, the results of this study as many as 58.3% of respondents have non-sedentary behavior. This may be because respondents

already have other alternatives to be physically active without having to violate physical distancing rules.

In the study of neck functional abilities, it was found that there were 40.4% of respondents with mild disability (n=63) and 1.9% of respondents with moderate disability (n=3). Disabilities in the neck can be caused by pain experienced by a person. Neck pain can trigger immobilization caused by a decrease in the ability to move joints in the cervical area. As a result, the flow of nutritious and oxygenated blood flowing to the muscles is reduced, which can lead to contractures that cause reducing in elasticity and flexibility of tissues in carrying out movements.

The functional ability of the neck can decrease or also called neck disability (As-Syifa et al., 2020). Neck pain has several risk factors including work posture, work duration, and muscle tension (Dzuria, 2021). Online learning cause students to use laptops continuously with non-ergonomic and static positions, poor posture, and long durations. It can trigger neck pain which leads to a decrease in neck functional ability.

CONCLUSION

Based on the results and discussion, it can be concluded that waist circumference for both men and women is dominated by the normal category, sedentary behavior by the non-sedentary category, and neck functional ability by the non-disabled category. Physiotherapy students are expected to be able to maintain their lifestyle and anthropometric components, as well as neck disabilities, so that they do not affect the level of productivity during lectures.

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