



THE CONTRIBUTION OF PHYSICAL FITNESS AND ANXIETY TO THE SLEEP QUALITY OF OLDER PEOPLE - A CORRELATIONAL STUDY OF PHYSICAL FITNESS AND ANXIETY TO THE SLEEP QUALITY OF OLDER PEOPLE IN KARTASURA, INDONESIA

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Abstract:

Old age is a state that will be experienced by all humans. The physical change happens in this age group will become a certain problem when it is not treated with proper action since aging process does not only create physical but also psychical problems. Sleep is a rest condition needed by humans. Sleep disorder which often happens to older people can be a disturbing problem in the daily life. Sleeping process does not only relate to a peaceful mind but also a fit condition. The primary concern of this research is to examine the contribution of physical fitness and anxiousness to the sleep quality of older people. This study applies quantitative approach with correlational research method and the population is older adults (>60 years old) from a senior center in Kartasura. There are 60 respondents as the samples. Two out of three employed variables are independent variables which are physical fitness and anxiety, and the other variable is dependent which is sleep quality. Regression and correlation analysis is used as the data analysis technique by doing experiment of preconditions for normality and linearity testing. The hypothetical examination employs regression and correlation analysis, for each are predictor and multiple regression analysis along with double correlation. The result shows that physical fitness and anxiety are related both partially and simultaneously. They create regression equation for the sleep quality of older people, in which the significant relationship between physical fitness and sleep

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quality is value $p = 0,001$ ($p < 0,05$) while the relationship of anxiety and sleep quality is value $p = 0,001$. Any increase in physical fitness will lead to the improvement of sleep quality for 0,270 and any decrease in anxiety will improve the sleep quality for 0,369. The value R^2 with 0,612 shows that the contributed proportion of physical fitness and anxiety variables towards sleep quality variable is 61,2%. It means that physical fitness and anxiousness contributes for 61,2% while the remaining 38,9% is delivered from other variables which are absent within this test of linear regression model. The research conclusion mentions that physical fitness and anxiety relates and contributes both partially and simultaneously to the sleep quality of older people.

Keywords: physical fitness, anxiety, sleep quality

1. Introduction

Aging is a natural process which can be inconspicuous sometimes since it will happen on all systems of human body yet not all of them experience it at the same time. Even though aging process is a universal case, no one knows exactly about the cause or the reason why it happens on people with different ages.

The regression of physical ability on older people is a normal stage which leads to physical and psychological problems including sleep quality. Aside from that, other common problems relate with physical condition, such as sense of balance, strength, coordination, the decrease of body fitness, and others. Older adults also experience psychological problems, including fearfulness, gloominess, and anxiousness. The decrease of physical fitness from the lack of physical activity emerges weakness and limitation of functional activity on the daily life. Anxiousness is a common yet non-specific symptom from single emotional function which produces the feelings of uncomfortable, fearfulness, and uneasiness in facing the days onward. These problems have possibility in pertaining with sleep quality as the rest phase of an older adult.

From the explanation above, I am interested to use the samples of older people in Kartasura to observe the sleep quality, physical fitness and anxiousness in this research entitled "The Contribution of Physical Fitness and Anxiety to the Sleep Quality of Older People" (A Correlational Study Of Physical Fitness And Anxiety to the Sleep Quality of Older People in Kartasura).

1.1 Literature Review

Physical fitness is the ability in doing certain activity by using Vo_{2max} as the measurement parameter. Here, Vo_{2max} is the maximal oxygen volume which can be

used on a per-minute basis. Guyton and Hall (2008) in Giri Wiarto (2013:13) mention that Vo_{2max} is oxygen consumption rate in the maximum rate of aerobic metabolism. Thoden in Suranto's module (2008: 118) says that Vo_{2max} is the measurement of maximal aerobic power estimating the amount of maximal oxygen uptake per unit of time during exercise or test, in which any increase in intensity leads to fatigue. The factors affect Vo_{2max} are (Burhanudin Sadly, 2015):

1. age
2. exercise
3. altitude (O_2 rate)

The psychological factors are:

1. The ability of muscular system in consuming oxygen through energy production process.
2. The ability of nervous system, heart and lungs (cardiovascular) in transporting oxygen to the muscular system.

Anxiety is a common yet non-specific symptom from single emotional function. Usually, pathologic anxiousness is a condition beyond normal limit from certain real and maladaptive threat (Kaplan & Sadock, 1997).

One of the general symptom happens to everyone is anxiety. It is an undecipherable and spreadable worrisomeness related to the uneasiness which is impossible to help controlling the anxiousness. *Gamma-aminobutyric acid (GABA)* resistor, as well as endorphin, controls the neuron activity in the part of brain associated with anxiety (Stuart, 2007).

Sleep is defined as an unconscious state in which human can be awakened by receiving sensory stimuli or other stimuli (Guyton & Hall, 1997). Sleep is a process of changes in consciousness happened continuously during certain period (Potter & Perry, 2005). According to Chopra (2003), sleep is two contradictory activities in which the body gets a peaceful rest and the metabolism activity decreases yet at the same time the brain works harder when dreaming, compared to its condition in doing daily activity.

3. Methodology

This study was conducted for 4 weeks on November 2016. There are 32 males and 28 females as the obtained samples which are categorized based on sex.

In accordance with the research purpose, the correlational descriptive method is employed. Therefore, correlational descriptive method can be defined as a research

conducted by the researcher to understand the connection level of two or more variables without changing, adding, or manipulating the data.

This research applies multiple regression model in analyzing the data. This model is used to understand the influence of independent variable towards dependent variable which is the bank financial performance. Based on the written framework of idea, the research model can be formulated mathematically as:

$$KT = \alpha + \beta_1KJ + \beta_2KC + e$$

- α : Constant
- $\beta_1- \beta_5$: Coefficient
- KJ : Physical Fitness
- KT : Sleep Disorder
- KC : Anxiousness
- e : error

4. Result and Discussion

This research tests 2 independent variables towards 1 dependent variable. The independent variables are physical fitness and anxiety while the last variable is sleep quality. Physical fitness is measured with *Balke test* and anxiety is evaluated through *Hamilton Rating Scale for Anxiety (HRS-A)* questionnaire. In this study, the dependent variable of sleep quality employs *Pittsburgh Sleep Quality Index (PSQI)*. The correlational relationship of these variables is shown on the table below:

Table 1: Correlational result of physical fitness, anxiety, and sleep quality

Variable	r	Sig. p	Conclusion
Physical fitness	.470	0.001	Significant Positive Correlation
Anxiety	-.429	0.001	Significant Negative Correlation

Table 2: The test result of multiple regression hypothesis

Variable	Unstandardized Coefficients Beta
<i>Constant</i>	1.447
Physical fitness	0,270
Anxiousness	-0,369

Regression Equation:

$$KT = 1.447 + 0,270 KJ - 0,369 KC + e.$$

From the data analysis result, the hypothesis testing can be executed as follows:

Hypothesis Testing I

Based on the analysis of the physical fitness to sleep quality variable, the acquired result can be determined from the value of t test with the result shown on table 4.5. It shows that the relationship between physical fitness and sleep quality has correlational coefficient value (r) for 0.470 which means that the relationship has moderate correlation.

Hypothesis Testing II

Based on the analysis of the anxiety to sleep quality variable, the acquired result shows a negative relationship of anxiety to sleep quality. It can be determined from the value of t test with the result shown on table 4.5 which points out a significant relationship between anxiety and sleep quality variable with p value = 0,001 ($p < 0,05$). This relationship has correlational coefficient value (r) for 0.429 which means that the contribution of anxiety to sleep quality has moderate correlation.

Hypothesis Testing III

Based on the multiple regression analysis of physical fitness and anxiety to the sleep quality, they mutually produce regression equation as follows:

$$KT = 1.447 + 0,270 KJ - 0,369 KC + e$$

The equation above shows the physical fitness and anxiety variables which mutually predict the sleep quality. Any increase in physical fitness will improve the quality of sleep for 2,7 and in anxiety improves the quality of sleep for 3,69 (with negative direction). Here, the constant is 1,447 means that when physical fitness and anxiety has zero value, the Y value (sleep quality) is 1,447.

5. Conclusion

1. There is a significant relationship between physical fitness and sleep quality with p value = 0,001 ($p < 0,05$) and the correlational coefficient value (r) is 0.470 which means that the relationship has moderate correlation.
2. There is a significant relationship between anxiety and sleep quality with p value = 0,001 ($p < 0,05$). The correlational coefficient value (r) is 0.429 which means that it has moderate correlation.
3. The regression coefficient of physical fitness shows positive coefficient for 0,270 in which any increase in physical fitness will improve the quality of sleep.
4. The regression coefficient of anxiety shows negative coefficient for 0,369 in which any increase in anxiety will reduce the quality of sleep.
5. The R^2 value is 0,612 which indicates the contribution proportion of physical fitness and anxiety variables to sleep quality variable for 61,2%. In this context, physical fitness and anxiety has a contribution for 61,2% while the remaining 38,9% is delivered from other variables which are absent within this test of linear regression model.

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