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Effectiveness of Combining Effleurage Massage with Passive Stretching in Reducing Fatigue and Improving Sleep Quality in University Students

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ABSTRACT: This study aims to determine the effectiveness of combining effleurage massage with passive stretching on reducing fatigue and improving sleep quality in students. This study used a pre-experimental method with a one-group pretest-posttest design, conducted on 20 students at Yogyakarta State University who complained of excessive fatigue and poor sleep quality. The treatment given was a combination of effleurage massage and passive stretching for approximately 35 minutes and was performed once. The research instruments used were the Fatigue Severity Scale (FSS) to measure fatigue levels and the Pittsburgh Sleep Quality Index (PSQI) to measure sleep quality. Data analysis techniques used the Shapiro-Wilk normality test and the paired t-test to compare pretest and posttest data. The results showed that the effleurage massage with passive stretching method could significantly reduce fatigue and improve sleep quality with a P value <0.05. According to the effectiveness calculation results, the effectiveness value of the combination of effleurage massage and passive stretching in reducing fatigue was 42.2%, while in improving sleep quality, it was 62.1%. It was concluded that the combination of effleurage massage and passive stretching was effective in reducing fatigue levels and improving sleep quality in students.

KEYWORDS: Effleurage Massage, Passive Stretching, Fatigue, Sleep Quality, Students

I. INTRODUCTION

Students often experience fatigue due to their many academic activities, which leads to a decline in sleep quality and causes them to become sleepy, lack concentration, and tire easily (Marni et al., 2021). Students who experience poor sleep quality tend to experience fatigue more often, decreased concentration levels, and low motivation or enthusiasm for learning (Irwin, 2015). According to Soekanto and Rianti (2021), the concentration level of students in lectures is 20%, so that student concentration during the learning process decreases (Bouloukaki et al., 2023). Based on observations conducted on October 14-16, 2024, with questionnaires filled out by 56 students, the majority of Yogyakarta State University students experience excessive fatigue after attending lectures, which affects their sleep quality. Most students experienced fatigue with a prevalence of around 55.36%-71.43%, and students who experienced poor sleep quality were around 50%-96.43%.

Fatigue can be defined as a feeling of tiredness, lack of energy, and decreased physical performance that affects mental capacity, emotional state, and even sleep quality (Tornero-Aguilera et al., 2022). Based on research conducted (Adela et al., 2019), it was found that factors influencing fatigue include the type of activity, duration of activity, workload, physical condition, physiological condition, and psychological condition. Another risk that can have an impact is sleep quality, which is characterized by irregular or unpredictable sleep or rest hours, which can have a negative impact on students' sleep quality (Shin et al., 2019). According to the Indonesian Ministry of Health, the amount of sleep needed for adolescents (12-19 years) is approximately 9 hours per day, and for adults (19-40 years) is approximately 7-8 hours per day (Allan M. et al., 2016).

Efforts to address fatigue and improve sleep quality can be done in two ways, namely pharmacologically and non-pharmacologically (Choi et al., 2024). The treatment used to address fatigue and sleep quality in students in this study was a combination of effleurage massage and passive stretching. Effleurage massage is a massage technique involving gentle strokes toward the heart to improve blood circulation and reduce anxiety (Bender et al., 2019). Passive stretching is a stretching technique in which a person stretches their muscles without active effort on their part. Passive stretching is performed with the help of another person, stretching bands, or other mechanical devices (Graha, 2015). The combination of effleurage massage and passive

stretching provides a comprehensive relaxation effect that harmonizes the benefits of both techniques, namely muscle relaxation and flexibility, thereby helping to reduce tension caused by intense activity (Yuniana et al., 2022). The effects of increased blood flow and oxygenation from massage support the recovery of tired muscles (Tomlinson & Archer, 2015). Effleurage massage with passive stretching can reduce stress through the release of serotonin and endorphins, making it an effective alternative without the risk of drug dependence.

A literature review entitled "Effectiveness of Manipulative Therapy in Improving Sleep Quality and Reducing Fatigue Levels in Post Covid-19 Workers" written by Sabda Hussain et al in 2024 shows that manipulative therapy has a positive effect on reducing fatigue levels and improving sleep quality (As Shafi et al., 2024). Before treatment, 90% of workers experienced poor sleep quality as measured by the Sleep Quality Questionnaire (SQ). Twenty-four hours after treatment, of the 90% of workers who reported an improvement in sleep quality, only 10% still experienced sleep problems. Before the treatment, all workers complained of fatigue, but 24 hours after the treatment, only 5% still felt fatigued, and 95% reported a decrease in fatigue levels. In line with the research to be conducted by the researchers, the use of a combination of effleurage massage and passive stretching will greatly help students as an effective alternative to reduce fatigue and improve sleep quality (Kusworo et al., 2018). This study aims to determine the effectiveness of a combination of effleurage massage and passive stretching in reducing fatigue levels and improving sleep quality in students.

II. METHOD

This study used a pre-experimental method with a one-group pretest-posttest design, which used only one sample group without a control group. This study used purposive sampling based on inclusion and exclusion criteria, resulting in 19 participants, rounded up to 20. The inclusion criteria for this study were 1) active student status, 2) students experiencing excessive fatigue, 3) experiencing poor sleep quality, 4) not experiencing acute injury. Meanwhile, the exclusion criteria were 1) Having external/open wounds, 2) Experiencing serious bone disorders (fractures, etc.), 3) Experiencing infections (flu, fever, heat, etc.).

In practice, the sample will be measured in the pretest and posttest phases using the Fatigue Severity Scale (FSS) to measure the level of fatigue in students, with a scale of 1-7, starting from strongly disagree to strongly agree. A higher score indicates a higher level of severity. The lowest value of this instrument is 9 and the highest value is 63, where scores of 9-27 fall into the mild category, 28-46 into the moderate category, and 47-63 into the severe category. A score of <36 indicates no fatigue, and a score of >36 indicates fatigue in students. The FSS has a validity and reliability value of 0.880 (Butarbutar, 2014). Meanwhile, to measure sleep quality, the Pittsburgh Sleep Quality Index (PSQI) instrument is used. This instrument has 15 questions, with 4 closed questions answered with Yes (1) and No (0). The scores are added up to 1, and a score of 5 indicates poor sleep quality. Based on research conducted by Ikbal Zendi Alim et al. (2015), the PSQI has a validity value of 0.89 and a reliability value of 0.79. It can be concluded that both instruments in this study are valid and reliable.

The measured sample will receive treatment in the form of a combination of effleurage massage and passive stretching. The collected data will be analyzed using SPSS to test the effectiveness of the treatment, followed by a normality test to determine whether the data is normally distributed or not, and then a paired t-test to test for differences.

III. RESULTS AND DISCUSSION

A. RESULTS

The study was conducted on 20 students at Yogyakarta State University who complained of fatigue and poor sleep quality. The research sample consisted of 10 males and 10 females who met the inclusion and exclusion criteria. The results of the study can be seen in the following tables:

Table 1. Pretest Data

Indicator (pretest)	Min	Max	Mean	SD
Fatigue	37	59	47.70	5.362
Sleep Quality	5	9	7.00	1.124

Table 2. Posttest Data

Indicator (pretest)	Min	Max	Mean	SD
Fatigue	13	41	27.55	7.640
Sleep Quality	1	7	2.65	1.226

Based on Tables 1 and 2, the mean data for fatigue and sleep quality in the effleurage massage and passive stretching treatment sample were 47.70 pretest fatigue scores and 7.00 pretest sleep quality scores. Twenty-four hours after treatment, there was a decrease in fatigue levels with a mean score of 27.55 and an increase in sleep quality with a mean score of 2.65.

Table 3. Normality Test Results

Shapiro Wilk			
Variable	**Data**	**Sig**	**Description**
Fatigue	Pre-test-post-test difference	0.909	normal
Sleep quality	Pre-test-post-test difference	0.093	normal

Based on Table 3, the normality test results show that the sample with effleurage massage treatment with passive stretching on the variables of fatigue and sleep quality produced data P>0.05, indicating that both variables were normally distributed, so the hypothesis test used a paired sample t-test.

Table 4. Difference Test Results

Analysis	Variable	Sig (2-Tailed)	Description
Paired t-test	Fatigue	0.000	Significant
Paired t-test	Sleep quality	0.000	Significant

Based on Table 4, it shows that the data values in the difference test using the paired t-test are significant with a sig (2-tailed) of 0.00 after the combination treatment of effleurage massage and passive stretching. The result states that 0.000 is <0.05, indicating a significant difference between the pretest and posttest data

B. DISCUSSION

The data analysis calculations that have been carried out show that the level of fatigue felt by students has decreased, as seen from the results of the paired t-test analysis, which produced a value of 0.00<0.05. According to the effectiveness calculation results, the effectiveness value of combining effleurage massage with passive stretching in reducing fatigue was 42.2%. Effleurage massage can reduce fatigue levels because it is performed with a slow, repetitive rubbing technique that causes the body temperature to increase and vasodilation and capillarization to occur (Khairina & Septiany, 2024). Gentle and soft effleurage treatment can help improve blood and lymph circulation, as well as relax tense muscles, thereby reducing lactic acid buildup and muscle pain or stiffness, thus reducing fatigue (Wijayanto et al., 2023). Passive stretching can help increase blood flow and muscle oxygenation, increase synovial fluid production, improve proprioception and coordination, and trigger the release of endorphins, which have a pain-relieving effect (Trajano & Blazevich, 2021), thereby physiologically reducing fatigue in the body (Crawford et al., 2016).

The data analysis calculations showed an improvement in the students' sleep quality, as seen in the results of the paired t-test analysis, which produced a value of 0.00 < 0.05. According to the effectiveness calculation results, the effectiveness value of the combination of effleurage massage and passive stretching in improving sleep quality was 62.1%. Effleurage massage can improve sleep quality because it is performed with a gentle, repetitive rubbing technique (Zulkarnain & Nugraha, 2023). Effleurage treatment, which is gentle and soft, can reduce pain, create a sense of comfort, and relieve tension, allowing the patient to fall asleep (Khairina & Septiany, 2024). Meanwhile, passive stretching, according to Kararti (2021), has an analgesic effect that prevents pain and increases the pain threshold, as well as a relaxing effect, thereby reducing fatigue and improving sleep quality (González-Mena et al., 2024).

IV. CONCLUSION

The combination of effleurage massage with passive stretching has effectively reduced fatigue levels and improved sleep quality among students, as evidenced by the results of the paired t-test analysis, which yielded a p- value <0.05, namely 0.00, with a significance in the reduction of fatigue levels of 80%. According to the effectiveness calculation results, the effectiveness value of the combination of effleurage massage and passive stretching in reducing fatigue was 42.2%. Among students who experienced poor sleep quality, the percentage decreased from 100% of 20 samples to 5%, representing an increase of 95%. According to the effectiveness calculation results, the effectiveness value of the combination of effleurage massage and passive stretching in improving sleep quality was 62.1%.

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