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EXTENDED ABSTRACT

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THE RELATIONSHIP OF PHYSICAL ACTIVITY AND SLEEP QUALITY: A CROSS-SECTIONAL STUDY AMONG MALE STUDENTS

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I. Introduction

Physical inactivity and inadequate sleep represent critical public health challenges within university settings. Prior research demonstrates that a considerable number of students experience insufficient sleep and low physical activity levels, factors that can detrimentally affect both health and academic achievement [1]. This study investigates the relationship between physical activity and sleep quality among male students in the Faculty of Computer and Mathematical Sciences (FSKM) at Universiti Teknologi MARA (UiTM) Seremban 3. By systematically evaluating daily activity patterns alongside sleep metrics, our research aims to elucidate lifestyle behaviors that influence student well-being and academic performance. The findings highlight the urgent need for targeted health interventions, which may inform policy decisions and enhance campus wellness initiatives [2].

II. Methods

Physical activity levels were measured using the Global Physical Activity Questionnaire (GPAQ) [3], while sleep quality was evaluated with the Pittsburgh Sleep Quality Index (PSQI) [4]. Data were systematically collected from all participants to ensure consistency and reliability.

III. Results and Discussion

A. Physical Activity Level Among Male Student

Out of the male FSKM students, 23 were classified in the high physical activity group, with an average of 9,966 MET-min/week. In contrast, 6 students were in the moderate group (mean = 1,573 MET-min/week) and 2 in the low group (mean = 509 MET-min/week). Variability was higher among the highly active students than in the moderate and low groups. The Shapiro–Wilk test indicated that the high-activity group deviated significantly from normality ($p = 0.002$), whereas the moderate group did not ($p = 0.317$); normality for the low-activity group was not assessed due to the small sample size.

B. Sleep Quality Score Among Male student

Regarding sleep quality, 15 students demonstrated severe sleep issues (mean score = 15.73), 13 had moderate sleep quality (mean = 7.77), and only 3 reported good sleep quality (mean = 5.00). Shapiro–Wilk tests confirmed that the moderate ($p = 0.105$) and severe ($p = 0.253$) groups followed a normal distribution, while normality for the good sleep quality group could not be determined owing to its small sample. These findings suggest that a majority of the students experience poor sleep quality, which may adversely affect their overall well-being and academic performance.

C. Relationship Between Physical Activity and Sleep Quality Among Male Student

A Chi-square analysis revealed a statistically significant association between physical activity level and sleep quality ($\chi^2 = 11.5$, $p = 0.021$), with a Cramer's V of 0.431 indicating a moderate association. The contingency analysis demonstrated that students with higher physical activity levels were more likely to report moderate or good sleep quality, while those with lower activity levels predominantly experienced severe sleep issues. These results underscore the potential of regular physical activity to improve sleep quality among male FSKM students.

D. Discussion

The current study provides compelling evidence of a significant association between physical activity and sleep quality among male FSKM students. Our results reveal that students engaging in high levels of physical activity (with an average of 9,966 MET-min/week) are more likely to report moderate or good sleep quality, whereas those with lower levels of activity tend to experience severe sleep issues. These findings align with prior research suggesting that regular physical activity can positively influence sleep outcomes through mechanisms such as enhanced energy expenditure, reduced stress, and better circadian rhythm regulation [5].

The heterogeneity observed within the high-activity group, as evidenced by its non-normal distribution ($p = 0.002$), may reflect variations in the type, intensity, or duration of physical activities performed by the students. Such variability is not uncommon in self-reported physical activity data and underscores the complexity of accurately quantifying physical activity behavior in diverse populations [6]. In contrast, the moderate activity group exhibited a normal distribution ($p = 0.317$), which may indicate more homogeneous activity patterns among students who are neither extremely active nor sedentary.

Similarly, the sleep quality findings indicate that a majority of the students suffer from poor sleep quality, with 15 students classified in the severe sleep issues category, raising concerns about the potential impact of suboptimal sleep on their overall well-being and academic performance. The statistical normality in both the moderate and severe

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sleep quality groups suggests that these findings are robust and generalizable to similar student populations [4].

The significant Chi-square result ($\chi^2 = 11.5$, $p = 0.021$) and moderate Cramer's V (0.431) further confirm that higher physical activity levels are moderately associated with better sleep quality. This finding reinforces the notion that promoting physical activity may be a viable intervention strategy to alleviate sleep disturbances in university settings [7].

Nevertheless, the study has limitations, including small subgroup sizes for the low and moderate physical activity and good sleep quality categories, which may affect the reliability of the normality tests and generalizability. Future research should incorporate larger and more diverse samples, as well as objective measures of both physical activity and sleep quality, to corroborate these findings and elucidate the underlying mechanisms.

IV. Conclusions

Our results indicate that, among male FSKM students, high physical activity levels are associated with better sleep quality, while lower activity correlates with poorer sleep. These findings suggest that promoting regular physical activity could improve sleep outcomes and overall well-being in this population.

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