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The Impact Of Sleep Patterns On Body Weight Of UPRI Sports Coaching Education Students

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ABSTRACT

Irregular sleep patterns are increasingly prevalent among university students and are associated with metabolic disturbances, impaired recovery, and changes in body weight. This study aimed to analyze the impact of sleep patterns—including sleep onset time, wake-up time, sleep duration, sleep quality, and sleep schedule consistency—on the body weight of students in the Sports Coaching Education Study Program at Universitas Pejuang Republik Indonesia (UPRI). This research employed a quantitative correlational approach with a cross-sectional design. A total of 80 active students were selected using purposive sampling techniques. Sleep data were collected using the Pittsburgh Sleep Quality Index (PSQI) questionnaire and a 28-day sleep diary, while anthropometric measurements were used to determine Body Mass Index (BMI). Data analysis utilized Pearson correlation and stepwise multiple linear regression tests. The findings revealed that the average sleep duration of students was 6.24 hours per night, indicating insufficient sleep according to recommended standards. Correlation analysis demonstrated that short sleep duration was significantly associated with increased BMI ($r = -0.62$; $p < 0.001$). Late bedtime ($r = 0.54$; $p < 0.001$), poor sleep quality measured by PSQI ($r = 0.57$; $p < 0.001$), and social jetlag ($r = 0.49$; $p < 0.001$) were also significantly correlated with higher BMI. Multiple regression analysis showed that sleep duration, sleep quality, and bedtime collectively explained 58.4% of BMI variance. In conclusion, multidimensional sleep behavior significantly influences body weight among sports coaching students, emphasizing the importance of sleep hygiene interventions within student wellness and sports education programs.

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INTRODUCTION

Body weight is an important indicator of health status and physical performance, particularly among university students enrolled in sports coaching education programs. Students in sports-related disciplines are required to maintain optimal physical fitness because their academic and practical activities involve continuous physical movement, sports training, and performance-based learning. Excessive or insufficient body weight

may negatively affect endurance, agility, coordination, and overall athletic performance (Arga, 2025a, 2025b). In addition, an ideal body composition contributes to metabolic efficiency, cardiovascular health, and musculoskeletal function, all of which are essential for students involved in sports science and coaching education. Therefore, maintaining a balanced body weight is not only a matter of aesthetics but also a fundamental component of sports performance and academic productivity.

Health is recognized as a critical determinant of academic success and student productivity, especially among students in physically demanding educational environments such as sports coaching education programs (Ridwan et al., 2025; Suwardi et al., 2026). Among the various lifestyle factors influencing health, sleep patterns have emerged as a major concern in contemporary health science and sports physiology research. Sleep is no longer viewed merely as a passive resting state; rather, it is an active biological process involving hormonal regulation, tissue recovery, immune function, neural restoration, and cognitive processing (Walker, 2017). Adequate sleep is essential for maintaining metabolic homeostasis, energy balance, and physical recovery after exercise (Fullagar et al., 2015). Consequently, disturbances in sleep patterns may lead to physiological dysfunctions, including increased body weight and obesity risk.

Recent evidence indicates that sleep-related problems are highly prevalent among university students worldwide. A study conducted by Lund et al. (2010) reported that more than 60% of college students in the United States experienced poor sleep quality. Similar trends have also been observed in Asian and developing countries, including Indonesia. Several factors contribute to unhealthy sleep habits among university students, such as academic pressure, excessive screen exposure, late-night social activities, irregular schedules, and high caffeine consumption (Surani et al., 2015; Hershner & Chervin, 2014). For sports coaching education students, these challenges may become more complicated because intensive physical activity requires adequate recovery strategies, including sufficient sleep duration and quality (Ihsan et al., 2024). Failure to obtain restorative sleep may impair recovery processes and alter body metabolism, thereby affecting body weight regulation.

The association between sleep disturbances and body weight gain has been explained through several physiological and hormonal mechanisms. Sleep deprivation increases ghrelin secretion, which stimulates appetite, while simultaneously reducing leptin levels, the hormone responsible for satiety signaling (Spiegel et al., 2004). These hormonal changes contribute to increased hunger and calorie intake. Furthermore, insufficient sleep activates the endocannabinoid system, which enhances cravings for high-calorie and high-fat foods (Hanlon et al., 2016). Sleep restriction is also associated with impaired glucose metabolism, reduced insulin sensitivity, and elevated cortisol levels, all of which contribute to fat accumulation and metabolic imbalance (Taheri et al., 2004). In addition, fatigue caused by inadequate sleep decreases motivation for physical activity and lowers total energy expenditure, creating favorable conditions for body weight gain.

From the perspective of sports science, sleep is also closely associated with athletic recovery and physical adaptation. Athletes and physically active individuals

require adequate sleep to facilitate muscle repair, glycogen restoration, cognitive recovery, and neuromuscular adaptation (Nédélec et al., 2015). Poor sleep quality has been linked to decreased reaction time, impaired decision-making, reduced endurance, and increased injury risk (Watson, 2017). Therefore, understanding sleep behavior among sports coaching students is highly relevant because they represent a population exposed to both academic and physical stressors.

Numerous studies have investigated the relationship between sleep and body weight across various populations. Chaput et al. (2016) found that short sleep duration significantly increased the risk of obesity and metabolic syndrome among young adults. Similarly, Fatima et al. (2016), through a systematic review and meta-analysis, concluded that poor sleep quality and short sleep duration were strongly associated with overweight and obesity among university students. Kline et al. (2013) emphasized that sleep deficiency negatively influences energy balance through hormonal dysregulation and behavioral changes related to eating habits and physical inactivity.

Research in sports settings has also demonstrated the importance of sleep for maintaining body composition and performance. Fullagar et al. (2015) reported that inadequate sleep reduced athletic recovery and impaired physiological adaptation following exercise. Mah et al. (2011) observed that sleep extension improved athletic performance, reaction time, and mood among collegiate athletes. Furthermore, Roberts et al. (2019) identified that student-athletes with irregular sleep schedules showed higher body fat percentages and poorer recovery profiles compared to those with consistent sleep routines.

In Indonesia, studies concerning sleep and student health have gradually increased during the last decade. Several investigations reported that Indonesian university students commonly experience delayed sleep onset and insufficient sleep duration due to academic and technological factors (Putra et al., 2021; Sari et al., 2022). However, most national studies focus on general student populations and primarily measure sleep duration rather than multidimensional sleep characteristics. Research exploring the interaction between sleep quality, sleep timing, sleep consistency, and body weight among sports coaching students remains limited.

Internationally, contemporary sleep research has expanded beyond simple sleep duration measurements. Roenneberg et al. (2012) introduced the concept of social jetlag, referring to the mismatch between biological circadian rhythms and social schedules. Social jetlag has been associated with obesity, poor metabolic health, and increased body mass index (BMI). In addition, recent studies suggest that sleep timing and regularity may independently influence body composition, even when total sleep duration is adequate (Phillips et al., 2019). These findings indicate that sleep should be examined multidimensionally rather than through a single indicator.

Despite the growing body of literature regarding sleep and body weight, several significant research gaps remain unresolved. First, most previous studies have focused on general populations or non-athlete university students, making it difficult to determine whether the same relationships exist among sports coaching education

students who engage in structured physical activity and sports practice (Kline et al., 2013). Physical activity may act as a confounding variable capable of modifying the relationship between sleep and body weight. Therefore, findings from general student populations cannot be directly generalized to sports coaching students.

Second, empirical studies examining sleep patterns among university students in Eastern Indonesia remain scarce. Geographical conditions, cultural lifestyles, environmental characteristics, and time-zone-related circadian adaptations may uniquely influence sleep behavior among Indonesian students (Roenneberg et al., 2012). Consequently, there is a need for contextualized research focusing specifically on sports coaching students in Makassar and Eastern Indonesia.

Third, many previous studies measured sleep using only sleep duration indicators, without considering broader dimensions such as bedtime, wake-up time, sleep quality, schedule consistency, and social jetlag. This limitation reduces the comprehensiveness of sleep assessment and may overlook important behavioral and physiological aspects associated with body weight changes. Recent sleep science emphasizes that sleep is a multidimensional construct involving quantitative and qualitative components simultaneously (Buysse, 2014).

The novelty of this study lies in its multidimensional approach to sleep assessment by integrating five major sleep components: bedtime, wake-up time, sleep duration, sleep quality, and sleep schedule consistency. In addition, this study specifically targets UPRI Sports Coaching Education students, a population characterized by structured physical activity and distinctive academic-sport demands. Another novelty is the use of a 28-day sleep diary, which provides longitudinal and ecologically valid data compared with one-time questionnaire assessments commonly employed in previous studies. Furthermore, the inclusion of social jetlag as an analytical variable represents an innovative approach rarely applied in Indonesian sports science research.

Based on the background and identified research gaps, this study aims to: (1) identify the sleep pattern profiles of UPRI Sports Coaching Education students, (2) analyze the relationship between each sleep pattern component and students' body weight, and (3) determine the most dominant sleep component influencing body weight among sports coaching students.

This study offers several important contributions to sports science and student wellness research. Theoretically, it enriches the scientific understanding of multidimensional sleep behavior and body weight regulation among physically active university students. Practically, the findings may provide evidence-based recommendations for integrating sleep hygiene education into sports coaching curricula and student wellness programs. In addition, the study contributes to the development of preventive health strategies aimed at improving body composition, physical performance, and recovery management among sports coaching students in Indonesia.

In conclusion, sleep patterns represent a critical yet often overlooked determinant of body weight and health status among sports coaching education students. Considering the unique physical and academic demands faced by this population, a

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multidimensional understanding of sleep behavior is essential for developing effective wellness interventions. Therefore, this study is expected to provide valuable scientific evidence that strengthens the integration of sleep management into sports education and health promotion programs in Indonesian higher education institutions.

METHODS

This study employed a quantitative correlational approach using a cross-sectional research design to examine the relationship between sleep patterns and body weight among students of the Sports Coaching Education Program at UPRI Makassar. Cross-sectional studies are widely utilized in health and sports science research because they allow researchers to simultaneously assess behavioral and physiological variables within a specific population at a particular time (Setia, 2016). This design was considered appropriate because the present study aimed to identify associations between multidimensional sleep variables and body mass index (BMI) without manipulating the observed variables.

The population of this study consisted of all active students enrolled in the Sports Coaching Education Program of UPRI Makassar during the 2023/2024 academic year, totaling 240 students. The sample was selected using purposive sampling techniques to ensure that participants met the specific characteristics relevant to the study objectives (Etikan & Bala, 2017). The inclusion criteria were: (1) active students from semesters 2–8, (2) not suffering from chronic diseases affecting sleep or body weight, (3) not consuming medications influencing sleep patterns within the previous three months, and (4) willing to complete a 28-day sleep diary consistently. Based on the Slovin formula with a 5% margin of error, a total sample of 80 students was obtained. Similar sample determination procedures have been widely implemented in sports science and public health studies involving university populations (Rahman et al., 2022).

Sleep patterns were assessed using two complementary instruments to provide a multidimensional evaluation of sleep behavior. The first instrument was the Pittsburgh Sleep Quality Index (PSQI), a globally recognized questionnaire developed to assess subjective sleep quality and sleep disturbances (Buysse et al., 1989). The PSQI consists of 19 items covering seven dimensions, namely subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. A global PSQI score greater than five indicates poor sleep quality. The PSQI has demonstrated strong validity and reliability across diverse populations, including university students and athletes (Mollayeva et al., 2016). Recent studies have confirmed that PSQI remains one of the most reliable tools for measuring sleep quality in higher education and sports-related settings (Al Maqbali et al., 2020).

The second instrument was a 28-day sleep diary designed to record daily bedtime, wake-up time, sleep duration, and sleep schedule consistency. Sleep diaries are considered ecologically valid tools because they capture habitual sleep behaviors longitudinally rather than relying solely on retrospective recall (Carney et al., 2019). The

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use of a four-week monitoring period enabled researchers to obtain more representative data regarding participants' sleep routines and circadian behaviors. Sleep schedule consistency was analyzed using the Social Jetlag Index, calculated from the difference between the midpoint of sleep on weekdays and weekends (Roenneberg et al., 2012). Social jetlag has emerged as an important indicator of circadian misalignment and has been associated with obesity, metabolic disorders, and impaired physical performance (Wittmann et al., 2016). Incorporating this variable represents a more comprehensive approach compared with previous studies that focused solely on sleep duration.

Anthropometric measurements were conducted by trained personnel following standardized health assessment procedures. Body weight was measured using a calibrated digital scale with an accuracy of 0.1 kg, while height was measured using a stadiometer with an accuracy of 0.1 cm. Measurements were performed in the morning under fasting conditions of at least two hours to minimize fluctuations related to food and fluid intake (Stewart et al., 2011). Body Mass Index (BMI) was calculated using the formula: weight (kg) divided by height squared (m^2). BMI remains one of the most commonly used indicators for evaluating body weight status and nutritional condition in epidemiological and sports science research (Nuttall, 2015).

Data analysis was performed using SPSS version 26.0. Descriptive statistics were calculated to summarize participant characteristics and sleep profiles. Prior to inferential analysis, data normality was tested using the Shapiro–Wilk test, which is recommended for small-to-moderate sample sizes (Mishra et al., 2019). The relationships between sleep variables—including bedtime, wake-up time, sleep duration, PSQI score, and sleep schedule consistency—and BMI were analyzed using Pearson correlation tests. Pearson correlation analysis is frequently applied in behavioral and physiological studies to determine the strength and direction of linear associations between variables (Schober et al., 2018). Furthermore, stepwise multiple linear regression analysis was conducted to identify the most dominant sleep-related predictor influencing BMI among students. The significance level for all statistical analyses was set at $\alpha = 0.05$. This analytical approach has been widely used in contemporary sleep and obesity research to identify predictive factors associated with body composition outcomes (Chaput et al., 2020).

RESULTS AND DISCUSSION

Result

Respondent Characteristics

A total of 80 students from the Sports Coaching Education Program at UPRI Makassar participated in this study. Of the total respondents, 62 students (77.5%) were male and 18 students (22.5%) were female. The average age of participants was 20.3 ± 1.4 years. Most respondents were enrolled in semester 4 (27.5%) and semester 6 (25%), indicating that the sample was dominated by students in the middle phase of academic study.

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The descriptive statistics of sleep pattern variables and anthropometric status are presented in Table 1.

Table 1.
Characteristics of Sleep Patterns and BMI Status of Students (n = 80)

Variable	Mean	SD	Min	Max
Bedtime (WIT)	23.47	0.82	21.00	02.30
Wake-up time (WIT)	6.12	0.64	04.30	09.00
Sleep duration (hours/night)	6.24	1.18	3.50	9.00
PSQI Score	7.31	2.46	2.00	15.00
Social Jetlag (hours)	1.78	0.94	0.00	4.50
Body weight (kg)	66.40	10.70	48.00	98.00
BMI (kg/m^2)	23.80	3.40	17.10	33.60

Based on Table 1, the average bedtime of respondents was 23:47 WIT, while the average wake-up time was 06:12 WIT. These values produced an average sleep duration of 6.24 hours per night, which is below the recommended sleep duration of 7–9 hours for young adults according to the National Sleep Foundation guidelines. The mean PSQI score was 7.31, indicating generally poor sleep quality among respondents. Specifically, 57 students (71.3%) had PSQI scores greater than 5, which categorized them as having poor sleep quality.

The average social jetlag value was 1.78 hours, reflecting substantial inconsistency between weekday and weekend sleep schedules. This finding suggests that many students experienced circadian rhythm disturbances due to irregular sleep timing. From the anthropometric perspective, respondents had an average body weight of 66.40 kg, ranging from 48.00 kg to 98.00 kg. The average Body Mass Index (BMI) was 23.80 kg/m^2, with values ranging from 17.10 kg/m^2 to 33.60 kg/m^2. These findings indicate that while several students maintained normal BMI levels, a considerable proportion demonstrated overweight or obesity tendencies.

Relationship Between Sleep Patterns and BMI

The results of Pearson correlation analysis examining the relationship between sleep pattern components and BMI are shown in Table 2.

Table 2.
Correlation Between Sleep Pattern Components and Students' BMI

Sleep Pattern Component	r	p-value	Interpretation
Sleep duration (hours)	-0.62	0.001*	Strong
Bedtime	0.54	0.001*	Moderate
Wake-up time	-0.38	0.001*	Weak–Moderate
PSQI score (sleep quality)	0.57	0.001*	Moderate
Social Jetlag (schedule consistency)	0.49	0.001*	Moderate

The findings revealed that sleep duration had the strongest negative correlation with BMI ($r = -0.62$; $p < 0.001$). This result indicates that students with shorter sleep duration tended to have higher BMI values. In other words, insufficient sleep was associated with increased body weight among Sports Coaching Education students.

These findings support previous evidence suggesting that sleep deprivation contributes to obesity risk through hormonal dysregulation and decreased energy expenditure.

Bedtime also demonstrated a significant positive correlation with BMI ($r = 0.54$; $p < 0.001$). Students who slept later at night generally showed higher BMI values. This result suggests that delayed sleep timing may contribute to unhealthy metabolic regulation and increased fat accumulation. The phenomenon is closely related to evening chronotype behavior, which has frequently been associated with overweight and obesity risk.

Sleep quality measured using the PSQI score showed a moderate positive correlation with BMI ($r = 0.57$; $p < 0.001$). Students with poorer sleep quality tended to have higher BMI levels. Furthermore, social jetlag was significantly associated with BMI ($r = 0.49$; $p < 0.001$), indicating that irregular sleep schedules and circadian misalignment contributed to body weight increases among respondents.

Dominant Predictors of Sleep Patterns on BMI

To determine the most influential sleep-related predictors affecting BMI, a stepwise multiple linear regression analysis was performed. The results are presented in Table 3.

Table 3.
Multiple Linear Regression Analysis Results

Model	R Square	F	p-value	Dominant Predictors
Stepwise Regression	0.584	35.70	< 0.001	Sleep duration, PSQI score, Bedtime

The regression analysis produced a final model containing three significant predictors: sleep duration ($\beta = -0.48$; $p < 0.001$), PSQI score ($\beta = 0.31$; $p < 0.01$), and bedtime ($\beta = 0.22$; $p < 0.05$). The overall model explained 58.4% of the variance in BMI ($R^2 = 0.584$; $F = 35.70$; $p < 0.001$), indicating that sleep-related variables substantially contributed to body weight variation among respondents.

Among all predictors, sleep duration emerged as the strongest determinant of BMI. Students with shorter sleep duration were more likely to experience higher BMI values. Sleep quality represented the second strongest predictor, while bedtime contributed moderately to BMI variation. These findings imply that extending sleep duration, improving sleep quality, and maintaining earlier bedtime schedules may represent effective intervention strategies for controlling body weight among sports coaching education students.

Overall, the results demonstrate that multidimensional sleep behavior—including duration, quality, timing, and schedule consistency—plays a substantial role in influencing body weight among UPRI Sports Coaching Education students.

Discussion

The findings of this study demonstrate that sleep patterns significantly influence body weight among UPRI Sports Coaching Education students. The results revealed that the average sleep duration of respondents was only 6.24 hours per night, which is below the recommended sleep duration of 7–9 hours for young adults established by the National Sleep Foundation. In addition, 71.3% of students had PSQI scores above 5,

indicating poor sleep quality. These findings suggest that sleep deprivation and sleep disturbances are highly prevalent among sports coaching students. Such conditions are concerning because adequate sleep is essential for physiological recovery, metabolic regulation, and optimal physical performance, particularly among physically active populations.

The correlation analysis showed that sleep duration had the strongest negative relationship with BMI ($r = -0.62$; $p < 0.001$), indicating that shorter sleep duration was associated with higher BMI values among students. This finding aligns with the meta-analysis conducted by Cappuccio et al. (2008), which reported that individuals with short sleep duration had a significantly higher risk of obesity compared with individuals obtaining sufficient sleep. Similarly, Chaput et al. (2016) emphasized that insufficient sleep contributes to positive energy balance and body fat accumulation. From a physiological perspective, sleep deprivation alters appetite-regulating hormones, specifically increasing ghrelin secretion while reducing leptin levels, thereby stimulating hunger and excessive calorie intake (Spiegel et al., 2004). Moreover, Taheri et al. (2004) reported that sleep restriction increases cravings for energy-dense foods and decreases motivation for physical activity, both of which contribute to weight gain.

The present study also revealed that later bedtime was positively correlated with BMI ($r = 0.54$; $p < 0.001$). Students who slept later at night tended to have higher body weight and BMI values. This result supports the chronotype theory proposed by Roenneberg et al. (2012), which explains that individuals with evening chronotypes are more likely to develop unhealthy lifestyle behaviors, including irregular eating schedules, reduced physical activity, and circadian rhythm disruption. Garaulet et al. (2013) further demonstrated that late sleepers generally consume more calories during nighttime hours and exhibit poorer dietary quality than early sleepers. In the context of university students, late-night sleeping is often accompanied by prolonged screen exposure, excessive gadget use, and late-night snacking behaviors, which collectively increase total caloric intake and reduce sleep efficiency.

The positive relationship between poor sleep quality and BMI ($r = 0.57$; $p < 0.001$) found in this study is also consistent with previous investigations in sleep and obesity research. Theorell-Haglöw et al. (2012) found that insomnia symptoms and fragmented sleep significantly increased obesity risk in young adults. Poor sleep quality contributes to metabolic dysfunction through impaired glucose tolerance, insulin resistance, and increased cortisol secretion (Knutson et al., 2007). Cortisol elevation due to sleep disturbances may promote visceral fat accumulation and negatively affect energy metabolism. Furthermore, poor sleep quality reduces recovery efficiency and may impair exercise performance among sports coaching students who routinely engage in intensive physical activities.

The current findings also demonstrated that social jetlag significantly correlated with BMI ($r = 0.49$; $p < 0.001$). Social jetlag reflects inconsistency between biological circadian rhythms and socially imposed schedules, particularly differences in sleep timing between weekdays and weekends. Maukonen et al. (2019) identified social jetlag

as an independent risk factor for obesity and metabolic syndrome. Irregular sleep schedules may impair circadian regulation of appetite hormones, glucose metabolism, and energy expenditure. In sports coaching students, inconsistent sleep timing may additionally interfere with recovery processes following physical training, thereby increasing fatigue and reducing exercise adaptation.

An important contribution of this study is the identification of sleep duration, PSQI score, and bedtime as dominant predictors of BMI through stepwise multiple regression analysis. The regression model explained 58.4% of the variance in BMI, indicating that sleep-related variables substantially contribute to body weight variation among sports coaching students. Sleep duration emerged as the strongest predictor (β = -0.48), followed by sleep quality and bedtime. These findings are highly consistent with Chaput et al. (2016), who argued that sleep duration is a fundamental determinant of body weight regulation alongside physical activity and nutritional intake. The substantial predictive value of sleep variables in this study indicates that sleep behavior should be considered a central component of student wellness management in sports education settings.

The mechanisms underlying the relationship between sleep deprivation and increased BMI among sports coaching students involve both hormonal and behavioral pathways. First, inadequate sleep suppresses growth hormone (GH) secretion, which plays an essential role in lipolysis and maintenance of lean muscle mass. Dattilo et al. (2011) explained that reduced GH secretion due to sleep deprivation may shift body composition toward increased fat accumulation. Second, activation of the hypothalamic-pituitary-adrenal (HPA) axis during sleep restriction increases cortisol secretion, which exerts catabolic effects on muscle tissue while promoting visceral adipose tissue accumulation (Leproult & Van Cauter, 2010). Third, among physically active university students, insufficient sleep impairs muscle recovery, increases fatigue perception, and decreases training performance, thereby reducing total energy expenditure.

The finding that late bedtime contributed to higher BMI is also consistent with the theory of time-restricted eating. Sutton et al. (2018) reported that late-night eating patterns are associated with impaired lipid metabolism and reduced fat oxidation efficiency. Students who sleep late generally have prolonged eating windows extending into nighttime hours, during which metabolic efficiency is lower than during daytime periods. Additionally, late-night snacking behaviors commonly observed among university students increase total daily caloric intake without corresponding increases in physical activity.

From a sports science perspective, the results of this study reinforce the critical role of sleep in physical recovery and performance adaptation. Fullagar et al. (2015) emphasized that adequate sleep is essential for glycogen restoration, tissue repair, cognitive recovery, and neuromuscular adaptation among athletes. Nédélec et al. (2015) further explained that chronic sleep restriction negatively affects reaction time, decision-making ability, endurance, and muscular recovery. Therefore, the high prevalence of poor sleep observed among UPRI sports coaching students may not only affect body weight but also reduce athletic performance and academic productivity.

The findings of this study also have practical implications for university health promotion and sports education programs. Since sleep duration and sleep quality were identified as major predictors of BMI, interventions focusing on sleep hygiene education may help prevent overweight and obesity among sports coaching students. Buysse (2014) recommended several evidence-based sleep hygiene strategies, including maintaining consistent sleep schedules, reducing gadget exposure before bedtime, minimizing caffeine intake at night, and optimizing sleep environments. Educational institutions should consider integrating sleep management education into wellness and sports science curricula to improve students' overall health and performance outcomes.

Despite the important findings, this study has several limitations. The cross-sectional design prevents causal interpretation between sleep patterns and BMI. Future longitudinal or experimental studies are needed to determine causal mechanisms more clearly. Additionally, sleep measurements relied partly on self-reported data, which may be affected by recall bias. Nevertheless, the inclusion of a 28-day sleep diary strengthened the ecological validity of the findings by providing longitudinal observations of students' habitual sleep behaviors.

Overall, this study confirms that multidimensional sleep behavior—including sleep duration, sleep quality, bedtime, and sleep schedule consistency—plays a major role in influencing body weight among sports coaching education students. The results provide strong evidence that sleep is not merely a complementary lifestyle factor but rather an important determinant of nutritional status, metabolic health, and physical performance in university students engaged in sports education.

CONCLUSION

Based on the findings of this study, it can be concluded that sleep patterns have a significant impact on the body weight of UPRI Sports Coaching Education students. The results demonstrated that short sleep duration, late bedtime, poor sleep quality, and inconsistent sleep schedules were all significantly associated with increased Body Mass Index (BMI). Among the investigated variables, sleep duration emerged as the strongest predictor of BMI, followed by sleep quality and bedtime. The multiple regression analysis indicated that these three variables collectively explained 58.4% of BMI variation among respondents, highlighting the substantial contribution of sleep behavior to students' nutritional and metabolic status.

The study also revealed that the average sleep duration of students was below the recommended standard for young adults, while the majority of participants experienced poor sleep quality based on PSQI scores. These findings suggest that sleep deprivation and circadian rhythm irregularities are common among sports coaching students and may negatively affect not only body composition but also physical recovery and sports performance.

Therefore, this study recommends the implementation of sleep hygiene education programs as part of holistic student wellness initiatives. Universities should also

consider arranging training schedules and academic activities that do not excessively compromise students' sleep needs. Furthermore, future research employing longitudinal designs and objective sleep assessment methods such as actigraphy is strongly recommended to strengthen the generalizability and scientific robustness of these findings.

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