

# Modern Lifestyle and Mental Health: An Observational Study Among Young Adults

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**Abstract:** Mental health is increasingly recognized as a global priority in the digital era. Recent data show that 6.2% of individuals aged over 15 years experiences emotional mental disorders, often manifested as symptoms of anxiety. Lifestyle factors such as diet, physical activity, and sleep duration are thought to play a critical role in influencing anxiety risk. This study aimed to investigate the association between ultra-processed food consumption, physical activity, sleep duration, and anxiety disorders among young adults. A quantitative, cross-sectional design was applied with a total of 175 respondents aged 18–23 years. Data were analyzed using the chi-square test with a significance level of 0.05. The findings revealed no significant association between ultra-processed food consumption or physical activity and anxiety. However, sleep duration showed a significant association with anxiety ( $p = 0.031, <0.05$ ). Insufficient sleep may contribute to dysregulation of stress hormones, thereby increasing the risk of anxiety disorders.

## 1 INTRODUCTION

Mental health issues among young adults have become a priority issue in today's digital age. Based on data from the 2018 Basic Health Research, it was found that 6.2% of the population over the age of 15 experienced emotional mental disorders with symptoms of anxiety. Then in 2023, the prevalence of depression in Indonesia was found to be highest in the 15-24 age group at 2% (Indonesian Ministry of Health, 2023). Several conditions can influence the occurrence of anxiety in young adults, namely biological, psychological, environmental, and lifestyle factors (Bandelow & Michaelis, 2015; WHO, 2017). Changes in modern lifestyles have led to unhealthy behavior patterns, including high consumption of ultra-processed foods (UPF), lack of physical activity, and disrupted sleep patterns.

In 2020, UPF consumption in Indonesia reached 45% of total calorie intake (Diba, 2025). Data from the Indonesian Ministry of Health in 2018 found that 64.3% of adults consumed sweetened foods (UNICEF, 2019). High consumption of UPF, which is high in sugar, fat, and additives, can increase the prevalence of obesity and the risk of health disorders such as heart disease, hypertension, diabetes mellitus, and other chronic diseases. In addition, UPF consumption can be associated with an increased risk of anxiety disorders. A systematic review conducted by Lane (2022) showed that high UPF consumption can increase the risk of anxiety symptoms by up to 48% compared to low consumption (Lane et al., 2022).

On the other hand, technological advances have increased sedentary behavior in society. Working in front of computers and playing with

gadgets encourages individuals to be physically inactive. According to the World Health Organization (WHO), 31% of the adult population worldwide is physically inactive (WHO, 2024). In Indonesia alone, 37.7% of the population is physically inactive (Indonesian Ministry of Health, 2023). Lack of physical activity can affect an individual's mood and energy levels. Previous studies have shown that sufficient physical activity has an indirect effect on reducing anxiety, mediated by better sleep quality (Chen dkk., 2025).

Sleep disorders are also commonly experienced by young adults in today's digital age. Exposure to blue light from electronic devices used before bedtime and irregular sleep patterns can disrupt the duration and quality of an individual's sleep. According to a survey by Kurious-Katadata Insight Center (KIC), the majority, or 46.2% of Indonesian respondents, usually sleep between 4-6 hours a night. According to the Indonesian Ministry of Health, the ideal sleep duration for adults is 7-8 hours (Annur, 2023).

The results of a study show that 55.8% of respondents have an average sleep duration of 6.8 hours per day. In this study, several factors were found to be related to sleep duration, namely the gender and psychological condition of the respondents. Respondents who experienced symptoms of stress and anxiety also experienced poor sleep quality (Lemma et al., 2012). Another study shows that sleeping less than 5 hours per day increases the risk of anxiety by 40%, while sleeping 5-7 hours per day increases the risk by 17% (Wang dkk., 2025).

Anxiety disorders experienced by young adults can affect various aspects of life, such as

academic, social, and psychosocial well-being. According to studies, anxiety can increase the risk of major depressive disorder, substance abuse, and alcohol abuse (Essau et al., 2014). From a socioeconomic perspective, anxiety experienced in early adulthood can affect work productivity and contribute to economic losses. In adolescents, social anxiety is associated with behavioral disorders at school, school dissatisfaction, social isolation, and lack of interest in education. Anxiety experienced by young adults can affect work productivity and contribute to economic losses. In adolescents, social anxiety is associated with behavioral problems at school, school dissatisfaction, social isolation, and low educational interest (Jystad et al., 2021).

Based on this background, the researchers wanted to determine the relationship between UPF consumption behavior, physical activity, and sleep duration with anxiety disorders in young adults.

## 2 METHOD

This study is an online survey with a quantitative approach using a cross-sectional analytical design. Google Forms was used to collect research data. The population in this study was students of UIN Sunan Ampel Surabaya aged 18-23 years. The sample size was 174 subjects, determined using Lemeshow's two-proportion formula. The sampling technique used was accidental sampling. The data analysis used was univariate and bivariate. Univariate analysis was used to determine the frequency distribution of the research variables, while bivariate analysis was used to determine the relationship between ultra-processed food consumption, physical activity, and sleep duration

with anxiety in young adults using the Chi-square test. The strength of the relationship in this study was determined using the Odds Ratio (OR) measure.

### 3 RESULT

Research data in the form of respondent characteristics can be seen in Table 1, which shows the frequency distribution of the age and gender of the research subjects as follows:

Table 1: Frequency distribution of respondents' ages

Age group	Frequency	%
18-19	54	31,1
20-21	98	56,3
22-23	22	12,7
Total	174	100.0

Based on Table 1 above, it can be seen that most subjects were aged 20-21 years (56.3%), followed by those aged 18-19 years (31.1%). Characteristics such as gender can be seen in Table 2 below, with the results showing that female respondents dominated with 152 subjects (87.4%).

Table 2: Frequency distribution of respondents' gender

Gender	Frequency	%
Male	22	12,6
Female	152	87,4
Total	174	100.0

The univariate data variables of the study, namely UPF consumption, physical activity, and sleep duration, can be seen in Table 3 below:

Table 3: Univariate data of research variables

Variable	Frequency	%
UPF Consumption		
1. Low	52	29,3
2. High	123	70,7
Physical activity		
1. Low	42	24,1
2. High	132	75,9
Sleep duration		
1. Insufficient	142	81,6
2. Adequate	32	18,4
Anxiety		
1. Mild	147	84,5
2. Severe	27	18,4
Total	174	100.0

Based on Table 3 above, it can be seen that UPF consumption in this study was high, with 123 subjects (70.7%) and physical activity was also high, with 132 subjects (75.9%). In contrast, the sleep duration variable showed different results, with 142 subjects (81.6%) having insufficient sleep duration, while the independent variable of anxiety was still mild in 147 subjects (84.5%).

Table 4: Relationship between research variables

Variable	p-value	OR (CI 95%)
1. UPF consumption with anxiety	0,515	1,544 (0,584-4,084)
2. Physical activity with anxiety	0,144	0,473 (0,197-1,133)
3. Sleep duration with anxiety	0,031	0,144 (0,019-1,103)

Based on Table 4, it can be seen that the results of the bivariate analysis of UPF consumption and anxiety using the Continuity correction test obtained a p-value of 0.515, which exceeds the significance threshold of 0.05 ( $p > 0.05$ ), meaning that there is no relationship between UPF consumption and anxiety. Similarly, the results of the test of the physical activity variable with anxiety show a value of 0.144,

which also indicates no relationship between the two. Meanwhile, Fisher's exact test of sleep duration with anxiety shows a value of 0.031 ( $p$ )

## 4 DISCUSSION

Based on the results of the study, it can be seen that of the three lifestyle variables, namely UPF consumption, physical activity, and sleep duration, only the sleep duration variable is associated with anxiety disorders in the young adult age group.

UPF consumption and anxiety showed that the majority of respondents were in the high category of UPF consumption, at 70.7%, but the continuity correction test showed no significant relationship between the two, with a  $p$ -value of 0.515 and the highest estimated odds ratio (OR) among the other variables at 1.544.

The results of this study are in line with previous studies in Brazil, where high UPF consumption was not associated with depression, anxiety, or stress. However, fresh food consumption was associated with a lower risk of mental disorders (Costa et al., 2024). Another study in Iran on adults found that UPF consumption was not associated with anxiety and sleep duration disorders (Abdollahpour et al., 2025). The absence of a relationship between UPF consumption and anxiety may be due to other factors, such as socioeconomic status or physical health, which have a greater influence on anxiety than UPF consumption alone. Additionally, the use of questionnaires to assess UPF consumption is prone to memory bias among respondents, which can affect the analysis results.

Although the results of the study show no relationship between UPF consumption and anxiety,

high UPF consumption can affect an individual's physical health. UPF's high content of added sugar, saturated fat, sodium, and low fiber and micronutrients can increase the risk of obesity, insulin resistance, hypertension, and dyslipidemia (Hall et al., 2019). In addition, studies also show an increased risk of coronary heart disease, stroke, and death from cardiovascular disease in individuals who consume high amounts of UPF foods (Srouf et al., 2019). Several other studies have also found an increased risk of cancer, particularly breast cancer, due to the consumption of UPF-containing additives and contamination from packaging, followed by a low-nutrient diet (Fiolet et al., 2018).

Physical activity and anxiety showed that the majority of respondents, 75.9%, were in the high category for physical activity, but the continuity correction test showed no significant relationship between the two, with a  $p$ -value of 0.144 and an estimated odds ratio (OR) of 0.473.

The results of this study are in line with research in Sweden. The study was conducted continuously, where at the beginning of the study, a relationship was found between physical activity and anxiety symptoms. The results showed that individuals who routinely performed more than 150 minutes of physical activity per week had a lower chance of experiencing anxiety symptoms (OR 0.76-0.64). However, in further analysis, no significant relationship was found between physical activity and new anxiety disorders (Hallgren et al., 2019). Similar findings were also found in a 2021 study, which compared the physical activity of ski race participants with the general population. Active participants had a lower overall risk of anxiety disorders. However, women with higher physical performance actually

had an increased risk of anxiety, while no significant association was found in men (Svensson et al., 2021). Physical activity has a strong association with depression but an inconsistent association with anxiety. Physical activity reduces the risk of depression but is not always significantly related to anxiety (Harvey et al., 2017). This occurs because the biological mechanisms of physical activity (endocannabinoids, BDNF, serotonin regulation) work more quickly on symptoms of depression than on anxiety. Anxiety is influenced by various factors such as genetics, personality, stress, social support, and past trauma. In young adults, there is a process of development or transition from adolescence to adulthood. During this period, there is a transition from school to college and the world of work, a process of self-discovery, and social pressure. This results in psychosocial factors being more dominant than lifestyle factors, such as physical activity. As a result, physical activity is not strong enough to show a significant relationship with anxiety.

The duration of sleep and anxiety showed that the majority of respondents, 81.6%, fell into the category of insufficient sleep duration, but Fisher's exact test showed a significant relationship between the two, with a p-value of 0.031 and an estimated odds ratio (OR) of 0.144.

Lack of sleep in young adults can disrupt the neurotransmitter system that normally optimally controls emotional responses, namely Gamma-Aminobutyric acid (GABA) and the adenosinergic system, thereby reducing the ability to calm the mind and increasing the occurrence of anxiety disorders. GABA works by reducing nerve cell (neuron) activity so that the brain can become more relaxed. During sleep, GABA activity increases, helping to reduce

cerebral cortex activity and promote sound sleep (Goldstein & Walker, 2014).

The adenosinergic system uses adenosine as a chemical signal in the brain. Adenosine effects on the brain: The accumulation of adenosine throughout the day makes individuals increasingly sleepy. Adenosine works by suppressing the activity of neurons that regulate wakefulness, thereby increasing sleepiness. If the adenosinergic system is disrupted, the "natural sleepiness" signal does not work, resulting in disturbed sleep and triggering anxiety. Adenosine receptors also play a role in regulating mood and anxiety. Disruptions in this system have been found in patients with anxiety disorders (Chellappa & Aeschbach, 2022).

In addition, sleep deprivation can increase amygdala reactivity and decrease regulation of the medial prefrontal cortex (mPFC), thereby increasing emotional responses to stress. Sleep deprivation also activates the HPA axis, resulting in high cortisol levels. This intensifies anxiety both at rest and during stress. In the long term, this can lead to a higher risk of anxiety (Wang et al., 2025).

## 5 CONCLUSIONS

Young adults, predominantly female, who consume UPF and engage in physical activity show no statistically significant relationship with anxiety, but the variable of sleep duration shows the opposite result, namely a significant correlation with anxiety, meaning that the shorter the sleep duration, the more prone to anxiety. Of all the variables studied, UPF consumption was the most dominant factor, as indicated by the highest odds ratio value. Recommendations in this study include increasing

education and improving health programs, especially regarding UPF consumption patterns, promoting physical activity, and managing sleep patterns to reduce anxiety in young adults.

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