Digital Media Consumption and Its Associations with Eating Behaviors, Sleep Quality, and Stress Perception Among University Students in Lahore

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Abstract

The rapid growth of exposure to the digital media especially in the young adults have highly impacted their life style patterns in terms of sleep and eating habits. Guided by the Bio-Psycho Social Model which explains the biological, psychological and social aspects(Engel 1977). This study investigates the connection of digital media use and its effect on sleep pattern, eating behaviors and perceived stress among Pakistani university students. The data was collected through an online survey which was conducted among 43 university students aged 18-25 from multiple regions of Pakistan, using a snowball sampling technique. The survey assessed digital media use, sleep quality, eating behaviors, and perceived stress. Findings revealed that the students who were highly engaged in social media use reported disrupted sleep patterns alongside irregular eating behaviors. These students also experienced high level of perceived stress compared to those with lower digital media use. The pattern provides the evidence of relation of digital media use with sleeping pattern and eating behaviors and also their relation with high perceived stress, overall giving a cyclic relationship between excessive digital media engagement and its negative effects on psychological wellbeing and lifestyle behaviors. The study highlights the potential impact of digital media on lifestyle patterns and psychological wellbeing, promoting importance of digital hygiene, regular sleeping schedules and, maintaining eating habits which may be helpful to reduce stress among young adults in Pakistan.

Keywords: *Digital media, perceived stress, sleep patterns, eating habits, mental health, university students*

Introduction

In the digital era, the use of excessive smartphones has become the part of young adults. The exposure to digital platforms is now integral part of their daily life. Younger adults usually between the age of 18-25 have grown up with near constant access to smartphone and social media, exhibiting a long screen time for academic social or other purposes. This rapid expansion of technology use has transformed the daily lives. Excess digital media usage has influence habits and psychological functioning of younger adults globally which is leading to disrupted sleep patterns, unhealthy eating habits, irregular eating schedules all these leading to physiological and psychological issues among adults most notably perceived stress(Spytska 2025).

Sleep plays an important role in mental, emotional and cognitive regulation. Sleep cycle is important to maintain the circadian rhythm of the body, as it regulate the circadian rhythm by synchronizing the internal biological clock with the external day-light cycle(Czeisler and Gooley 2007). Constant exposure to the screen and prolong exposure

to the screens especially at night disrupts the sleep quality. Exposure to the blue light emitting devices at late night interferes with melatonin production (hormone important for the sleep-wake cycle regulation), delays circadian rhythm and contributes to difficulty in falling asleep(Zhong, Masters et al. 2025). Young adults who are often engage in academic tasks, scrolling on social media apps , social networking, watching online streaming on social media all the night or in the major part of night have become common which is strongly effecting the sleep quality and habits(LeBourgeois, Hale et al. 2017). Poor sleep quality is strongly linked with the elevated stress levels, reduction in the coping abilities and impaired mental performance which then affect the performance of the adult in daily life, academics and also the psychological wellbeing.

Eating behavior is another important aspect which can be affected by the high digital media usage. Digital engagement with the social media apps mainly every time also leads to irregular eating, mindless eating over consumption or less consumption of food due to influencers misguidance or admiring them. Many of the adults eat while Scrolling through the social media constantly and not focusing on the food they are eating reduces the mindful awareness of hunger cues(Kumar, Kishor et al. 2025). Additionally stress due to social factors like academics or peer pressure due to digital connectivity, highly engaged on social media apps may trigger emotional eating tendencies, especially eating highly processed foods or sugary foods(Sidani, Shensa et al. 2016). The one more effect of highly engagement with the digital media apps is that when scrolling through the social media apps high quality visuals of fast food, desserts and other snacks activate the cravings of the person even though that person is not hungry still, eating those highly processed foods result in gut issues due to hormonal disruptions and also perceived stress, therefore creating a cyclical relationship between digital media usage, diet and stress levels. However, the university students mainly at this age between18-25 are in a critical developmental stage where long term lifestyle and habits are formed. Patterns that are established at this stage of life during university level often can extend to adulthood(Lioret, Campbell et al. 2020). If the problematic usage of digital media continued to disrupt sleep and dietary habits during this period, it may cause long term effects on the individuals and they can suffer from persistent stress and related mental health problems, therefore early identification and intervention can be meaningful and have long lasting benefits

The degree to which people consider their lives to be unexpected, uncontrolled, or overpowering is known as perceived stress(Cohen, Kamarck et al. 1983). It is a subjective sensation that represents both the demands of the outside world and a person's ability to meet those expectations. It has been demonstrated that academic demands, social expectations, financial concerns, and lifestyle factors including sleep and eating habits all have an impact on university students' perceptions of stress. High levels of perceived stress have been connected to poor academic performance as well as detrimental mental health effects like anxiety, depression, and burnout(McQuaid, Weiss et al. 2022). Therefore, finding targets for intervention that could enhance students' academic performance and well-being requires an understanding of the elements that contribute to perceived stress.

Understanding the relation between the digital media usage and how it is affecting the sleeping patterns and eating habits leading the young adults to perceived stress is so important as the young generation who face academic pressures transitional life challenges and other social expectations are the additive effects that can lead to stress among adults, these factors may also worsen their psychological resilience

Although the previous researches conducted in Pakistan have examined the individual relationship of digital media use and its effect on sleep quality, between the digital media use and its effect on eating habits and patterns and other lifestyle factors and the effects of digital media usage on perceived stress however there is still a need to study these variables

in an integrated form within a single conceptual framework, Pakistani university students may face unique cultural educational, other societal pressures, may also experiencing changes in their lifestyle associated with urbanization and globalization. These factors may amplify the effects of digital media use on sleep, eating behaviors and stress making It important to investigate this relationship in this context.

Given the increasing engagement with digital media of the young adults and its potential impact on their life style quality and behaviors, there is a need to examine this relationship that how far digital media impact our sleep quality and eating behaviors within the context of Pakistan. Therefore, the present study aims to explore the digital media influence change in eating habits and sleep patterns which contribute to perceive stress among Generation Z university students aged 18-25 in Pakistan. Specifically, this study investigates whether disruptions in sleep quality and unhealthy eating behaviors are associated with digital media use are linked to higher levels of perceived stress. By addressing this gap, this study seeks to generate evidence that would help the healthcare and educational professionals to generate interventions aimed at promoting digital hygiene, improved sleep hygiene and adaptive eating practices among young adults.

Literature Review

In the digital age, technology including social network use, online work, and screen-based entertainment is increasingly influencing the lives of young adults, especially those in Generation Z (about 18 to 25 years old). Their personal, social, and academic lives are deeply impacted by digital ecosystems, which include computers, cellphones, social networking sites, internet streaming services, and academic learning aids. Although there are numerous benefits to digital connectivity, like better communication, flexible learning, and information availability, concerns have been raised regarding how it can impact health-related behaviors. In particular, it appears that computer usage behaviors are quickly impacting sleep quality, perceived stress, and eating habits.

Understanding how technology affects young adults' lifestyle and psychological wellbeing is crucial for contemporary clinical psychology research since they are the most frequent users of digital devices and digital media platforms. Changes in everyday routines, including increased screen time, altered food habits, and disturbed sleep patterns, have been associated with this widespread digital exposure (Orben and Przybylski 2019) . The social and cognitive both the functioning depend upon these digital habits The rapid adoption of social media and cellphones by Pakistani university students has exacerbated these behavioral tendencies, but little descriptive research has looked at the relationships between these lifestyle changes in this specific context. This review of the literature focused on Generation Z in Pakistan and examines how exposure to digital media influences eating and sleeping habits, among other lifestyle behaviors, and how these changes raise perceived stress levels.

Numerous studies have demonstrated that prolonged use of digital devices and increased screen time disrupt sleep patterns, leading to problems like delayed bedtimes, frequent awakenings, and worse overall sleep quality. These disruptions have been linked to increased stress levels, poor mood regulation, and negative consequences on overall health.

Individuals who spend a lot of time on their phones, especially at night, typically remain up late. When people keep scrolling, watching movies, or talking, they delay their innate desire to sleep. This disrupts the normal sleep cycle and reduces the total amount of time spent sleeping.

A systematic review of observational studies which was conducted among the individuals within the age of 16 to 25 years reported that digital media use particularly at nighttime

use of social media was associated with short sleep-duration, poor sleep quality and delay bed time(Brautsch, Lund et al. 2023).

(Levenson, Shensa et al. 2016) highlighted that frequent use of various social media sites is a major cause of sleep disruptions. He found that frequent notifications and constant mobile phone checking delay the start of sleep, which reduces the overall quality of sleep. Similarly, (Woods and Scott 2016) discovered that people who use social media extensively had higher anxiety levels, which have a detrimental impact on the quality of their sleep. According to (Lund, Sølvhøj et al. 2021)younger users are more susceptible than older persons to the negative effects of media intake on sleep. To address these issues, (Tamura, Nishida et al. 2017) found that Teens who used cell phones for five hours or more a day were significantly more likely to suffer from insomnia (a sleep problem that can lead to increased stress levels). This clearly suggest that there is connection between excessive digital media use and irregular sleeping patterns. Additionally, using mobile phones for online discussion or chats for at least 120 minutes a day was associated with insomnia.

(Khan, Mushtaq et al. 2025) found a significant link between increasing evening digital media use and poorer sleep quality while studying media use in a semi-urban Pakistani setting. They found that individuals who spent more time on electronics before bed had higher sleep latency, more frequent awakenings, and poorer levels of total restfulness. Significantly, disturbed sleep was linked to greater reported stress levels, suggesting that stress and anxiety are caused by excessive screen time.

(Kubiszewski, Fontaine et al. 2014) found that children who used screens for more than an hour in the evening had later bedtimes and difficulty waking up, highlighting the detrimental impacts of electronic media use on sleep.

(Luk, Houston et al.) investigated how high levels of stress, processed food consumption, and excessive screen time may disrupt the chemicals that control sleep, like melatonin and cortisol, ultimately reducing the quality of sleep. The hypothalamic-pituitary-adrenal (HPA) axis is physiologically triggered by sleep deprivation or inadequate sleep, which increases the release of cortisol. Increased cortisol levels increase attentiveness, impatience, and decreased relaxation, which makes people feel more stressed. (Meerlo, Sgoifo et al. 2008) found that Sleep loss impairs the prefrontal cortex's ability to regulate emotions. Individuals show increased negative affect, anxiety, and reduced coping ability after poor sleep. Emotional dysregulation can intensify the perception of stress from everyday challenges(Goldstein and Walker 2014).

Similarly, people's eating habits have changed as a result of the digital age, including eating late at night, missing meals, and occasionally overindulging. Traditional meal routines are disrupted by the rising consumption of junk food and prepared meals due to easy availability to fast food establishments. Digital media consumption has an impact on eating habits in addition to sleep. Overuse of screens can interfere with regular eating schedules, causing students to miss breakfast or other important meals. People who use laptops or phones during meals are less careful of how much they eat. Overindulging, consuming more calories, and consuming unhealthy foods(Lee, Ban et al. 2021).

Due to time constraints and the attention-grabbing nature of digital devices, people frequently make up for it by devouring fast food or quick snacks(Kim, Kim et al. 2025).Digital media often promotes advertisements for fast food or sugary snacks. High screen time correlates with higher consumption of processed and energy-dense foods(Cartanyà-Hueso, González-Marrón et al. 2021)

This implies that Generation Z's eating habits and associated lifestyle consequences are influenced by digital media. All of these dietary changes and junk food consumption have an immediate impact on people's gut health, which can lead to hormonal imbalances and

stress. University students' eating habits have a big impact on their stress levels. (Song, Seo et al. 2006)examined the relationship between dietary behaviors and stress, and found that students who frequently skipped meals, consumed irregular diets, or relied heavily on high-fat and sugary foods reported higher perceived stress. High engagement on social media often makes the adults to follow the trends of foods in which they consume large amount of sugary and processed food. The food influencers attracting the people to consume that food.in Pakistan there is large population of young adults who are following the food trends which is resulting in unhealthy eating. Unhealthy eating patterns disrupt energy and nutrient balance, which can exacerbate physiological stress reactions and impair mood control. Unhealthy eating habits among students are increasingly associated with contemporary digital lifestyles in many developing countries, including Pakistan, where fast food is more readily available and screen-based distractions are ubiquitous. Because eating habits are directly linked to energy regulation, mood, and psychological well-being, the relationship between digital involvement and dietary disorders is significant in terms of perceived stress.

A person's physical and mental health are influenced by both sleep and nutrition; thus their disruption is a powerful indicator of felt stress. Poor sleep quality is associated with heightened physiological arousal, reduced emotional regulation, and impaired cognitive functioning (Van Reeth, Weibel et al. 2000). The Chronic loss of sleep overstimulates the stress response system which in result increase the cortisol levels in the body, decreasing the ability of coping, changes in mood and irritability

Similar to this, irregular eating habits like eating late at night, skipping meals, or ingesting high-sugar foods have an impact on blood glucose stability and mood, which can lead to tension, worry, and exhaustion (Mikolajczyk, El Ansari et al. 2009). Higher levels of perceived stress, academic pressure, and emotional exhaustion are reported by university students who engage in both poor sleep and bad eating habits.(Lohsoonthorn, Khidir et al. 2013)

The usage of digital media frequently serves as an upstream component that initiates these tendencies. Usually, the cycle proceeds in this order. High screen time → delayed sleep → fatigue during the day → unhealthy eating habits → diminished coping skills → increased perceived stress.(Thomée and health 2018)highlights this cumulative association, implying that young individuals are more susceptible to stress due to lifestyle disturbances brought on by technology.

Overall, existing research demonstrates the association of digital media use, stress eating patterns and sleep quality, it shows that how digital media disrupts daily routines and its negative impact on both physical and mental health. However, most studies examine these factors in isolation rather than exploring them combined influence. Also there is another gap that exist is the limited research focusing on generation Z in Pakistan, despite mounting evidence of university students' excessive screen use, mental health issues, and disturbed lifestyles. Therefore, the current study is to examine how altered eating patterns and insufficient sleep, which are impacted by excessive technology use, contribute to the elevated stress levels seen among Pakistani university students (Generation Z). Interventions to support mental and physical well-being can be informed by an understanding of these linkages.

Biopsychosocial Perspective

This can be aligned with the concept of biopsychosocial model which provides a comprehensive framework for understanding how digital media exposure, altered sleep, disrupted eating habits, and stress are interconnected(Engel 1977) . According to this model, health outcomes result from the dynamic interaction of biological, psychological, and social factors Using this framework in the context of the digital age, excessive screen

time and irregular eating habits can interfere with circadian rhythms, suppress the production of melatonin, raise cortisol levels, change the gut microbiota and hormonal balance, and cause sleep disturbances, exhaustion, and increased physiological stress(Mathews, Page et al.). Melatonin levels are lowered by screen time. Screen light in the evening, particularly short-wavelength "blue" light, suppresses the generation of melatonin, delays the circadian rhythm, and disturbs the regular architecture of sleep(Green, Cohen-Zion et al. 2017). Digital information that is extremely engaging or emotionally stimulating might raise physiological arousal. This affects the beginning and quality of sleep by activating the sympathetic nervous system and raising cortisol. Likewise, The metabolism of glucose and the hormones that control appetite and mood are disrupted by irregular meals. The hypothalamus releases cortisol releasing hormone (CRH) and the pituitary gland releases adrenocorticotropic hormone (ACTH) as a result of this activation of the hypothalamic-pituitary-adrenal (HPA) axis.

From a psychological standpoint, social media and other digital platforms induce emotional tension, social comparison, and cognitive stimulation, all of which further impede sleep and promote unhealthy eating habits. FOMO (fear of missing out) and increased attention can be brought on by constant connectivity and exposure to carefully chosen information, which can exacerbate perceived stress and impair mood regulation (Exelmans and Van den Bulck 2016). The brain remains hypervigilant when it is constantly connected to the internet. While emotionally charged content increases arousal, exposure to carefully chosen social media content fosters comparison and FOMO. When combined, these elements cause sleep delays, interfere with regular activities, and make people more susceptible to stress.

Peer pressure, cultural norms, and the pervasive internet advertising of fast food and unconventional lifestyles are all important social variables. Rapid smartphone use and widespread social media trends. Rapid smartphone use and social media trends in Pakistan exacerbate stress and irregular lifestyles by normalizing habits like using devices late at night and consuming junk food(Khan, Mushtaq et al. 2025). Using this model, it is evident that digital media, sleep, nutrition, and stress are all connected through a variety of pathways, with social pressures, psychological stress, and physiologic disturbances interacting to increase stress in Generation Z.

Methodology

Research Design

In order to investigate the association between digital media use, sleep quality, eating habits, and felt stress among Pakistani university students, this study used a quantitative cross-sectional approach. Self-administered questionnaires measuring behavioral, psychological, and lifestyle aspects were used to survey participants between the ages of 18 and 25. This approach was selected because it allows for the simultaneous analysis of several variables and their possible correlations, providing insight into the potential effects of digital media use on health-related behaviors and psychological well-being in a sample of young adults.

Population and Sampling

Data was collected through online survey method using self-administered questionnaire distributed via google forms from 43 participants aged 18-25 across different regions of Pakistan, using snowball sampling technique, Students currently enrolled in undergraduate or graduate programs were eligible to participate. Participation was voluntary and no financial or academic incentives were provided to the students.

Instrumentation

Data was collected through self-administered questionnaire distributed and developed through Google forms which included questions on digital media use, sleep quality, eating

behaviors, and perceived stress. The questionnaire consisted of four sections: demographic information like age, Gender, education level, digital media usage evaluating media consumption trends and average daily screen time.

Sleep Quality and Eating behaviors measured with items modified slightly to guarantee relevance to the study population from previously validated instruments. Higher score indicates disruptions in sleep patterns and eating behaviors.

Perceived stress was assessed using study specific scale adapted from the Perceived Stress Scale by (Cohen, Kamarck et al. 1983) was used to asses perceived stress. To improve cultural relevance and clarity for Pakistani university students between the ages of 18 and 25, a few elements were modified. The five questions on the scale measured emotional overload, stress, and a loss of control in day-to-day living. Responses were recorded on a 5-point Likert scale ranging from 1(strongly disagree) to 5(strongly agree), with higher score indicating greater perceived stress.

In this investigation, the modified perceived stress scale showed acceptable internal consistency (Cronbach's $\alpha \geq .78$). Expert assessment by clinical psychology academic members ensured content validity.

Statistical Analysis

Descriptive and inferential techniques were used to conduct statistical analysis. Frequencies and percentages were used in the analysis of demographic variables. For every continuous variable, descriptive statistics such as mean and standard deviation were computed. The association between digital media consumption, sleep quality, eating habits, and felt stress was evaluated using Pearson's product-moment correlation coefficient. IBM SPSS Statistics Version 31.0.1.0. was used to analyses the data, and p < 0.05 was chosen as the level of statistical significance.

Ethical Consideration

Throughout the investigation, ethical guidelines were closely adhered to. No personally identifiable information was gathered, participation was completely optional, and response confidentiality was guaranteed. The information was only used for academic research.

The demographic details are displayed in the Table 1. Out of the 43 participants, 24(55.8%) were female and 19(44.2%) were male. While 17 participants (39.5%) were between the age of 18 and 21, majority of the participants(n=26,60.5%) were between the age of 22 and 25

Table1.

Variable	Category	n	%
Gender	Male	19	44.2%
	Female	24	55.8%
Age Group	18–21 years	17	39.5%
	22–25 years	26	60.5%

Table 2 which is given below shows the digital media usage. Using digital media for more than four hours a day was reported by nearly half of the participants (n=18, 41.9%). 8 students (18.6%) reported the digital media usage for less than to hours every day, whereas 17 students (39.5%) reported using it for two to four hours a day.

Table2.

Media Use (hours/day)	Frequency (n)	Percentage (%)
< 2 hours	8	18.6
2–4 hours	17	39.5
> 4 hours	18	41.9

Table 3 shows Descriptive statistics for the main research variables.
Participants reported eating habits (M = 5.9, SD = 1.8), perceived stress (M = 19.4, SD = 5.2), and moderate sleep quality (M = 6.8, SD = 2.1).
Table3.

Variable	Mean (M)	SD
Sleep Quality	6.8	2.1
Eating Behaviors	5.9	1.8
Perceived Stress	19.4	5.2

Pearson correlation analysis was used to examine the relationships between digital media consumption, dietary behaviors, felt stress, and sleep quality (Table 4). Digital media use was positively correlated with subjective stress (r=.50, p <.01) and sleep quality (r =.42, p <.01). Both felt stress (r =.38, p <.01) and sleep quality (r =.28, p <.05) were strongly correlated with eating patterns.
Table 4.

Variable	Digital Media Use	Sleep Quality	Eating Behaviors	Perceived Stress
Digital Media Use	1.00	.42	.35	.50
Sleep Quality	.42	1.00	.28	.40
Eating Behaviors	.35	.28	1.00	.38
Perceived Stress	.50	.40	.38	1.00

Note. p <.05, p <0.1
These findings demonstrate significant relationships between eating patterns, perceived stress, sleep quality, and use of digital media. Table 5 displays the average felt stress levels by gender. Female participants reported somewhat greater levels of felt stress (M = 19.9, SD = 5.3) than male participants (M = 18.7, SD = 5.1).
Table5.

Gender	Mean Stress	SD
Male	18.7	5.1
Female	19.9	5.3

Findings and Discussion
The results of the study show that a sizable portion of students use digital media intensively, with 41.9% using it for more than four hours daily and 39.5% using it for two to four hours. Descriptive data showed that participants' perceived stress levels (M = 19.4, SD = 5.2), sleep quality (M = 6.8, SD = 2.1), and eating habits (M = 5.9, SD = 1.8) were all moderate. Correlation analysis revealed significant relationships between the variables under study. Digital media use was positively correlated with perceived stress (r =.50, p <.01) and sleep quality (r =.42, p <.01), indicating that increased media use is associated with higher stress and somewhat higher sleep ratings.
Eating behaviors were significantly correlated with perceived stress (r =.38, p <.01) and sleep quality (r =.28, p <.05), suggesting that better eating practices are linked to reduced stress and better sleep. Gender differences showed that female participants reported slightly higher levels of perceived stress (M = 19.9, SD = 5.3) than male participants (M = 18.7, SD = 5.1). Overall, the results point to the possible influence of lifestyle factors on mental health by indicating a relationship between felt stress among university students and digital media use, sleep quality, and eating habits.

There were a number of restrictions on this study. First, the results' generalizability is limited by the small sample size (N = 43). Second, only students between the ages of 18 and 25 were included in the study, which limited the findings to this demographic. Third, those who were not now enrolled in any academic program were not included; only enrolled undergraduate and graduate students were. Fourth, the accuracy of the measurements might have been impacted by the standardized questionnaires' incomplete adaptation or improper administration. Fifth, because the replies were self-reported, bias or erroneous memory could have affected them. Sixth, selection bias may have been created by the snowball sampling technique, decreasing representativeness. Other potential factors such as socioeconomic status, academic workload and mental health history was not considered which could have influence on stress levels.

Conclusion

According to the study, university students frequently use digital media extensively, and this usage is strongly linked to greater levels of felt stress. Additionally, there are significant correlations between stress and eating habits and sleep quality, indicating that students who have healthier food habits and better sleep patterns typically have lower stress levels. Furthermore, compared to male students, female students reported somewhat higher levels of stress.The percentage of male and female participants in the sample may have an impact on the tiny difference between the mean stress levels reported by female and male students. Overall, the results highlight the strong relationship between digital media use, lifestyle choices, and stress, highlighting the significance of encouraging healthy digital media practices, adequate sleep, and healthy eating habits to promote university students' mental health. recommendation

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