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RESEARCH ARTICLE

Investigation of the Impacts of Social Media Usage on Youth Mental Health in Tunku Abdul Rahman University Management and Technology

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ABSTRACT

Social media's pervasive use among college students raises concerns about its impact on mental health and academic performance, with studies showing effects like increased stress, anxiety, and depression. Research on how social media affects mental health and academic outcomes in youth, hinders the development of effective interventions. Our research aims to investigate the impact of social media's entertainment and educational components on college students' sleep, anxiety, depression, and academic performance, providing valuable insights into the interplay between social media use, mental well-being, and academic success. A cross-sectional study at TAR UMT surveyed 160 students using questionnaires on social media use, mental health, and academic performance. The survey employed simple random and convenience sampling, focusing on TAR UMT's student demographics. Data analysis utilised IBM SPSS Statistics 26 and Process Macro, examining correlations and mediating effects. This study has found out that using social media for education or entertainment purpose had no discernible effects on academic performance (CGPA) with mediating of anxiety, depression, or sleep. The study also found out significant correlations between social media usage for entertainment and anxiety levels, as well as academic performance among university students. However, social media use for educational purposes showed no significant correlation with anxiety levels or academic performance.

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INTRODUCTION

It's possible that students' extensive use of social media is contributing to their struggles in academics and with their mental health. Although social media use affects mental health and

academic performance, there is not enough research on the subject. Our research objectives aim to explore how entertainment and educational aspects of social media affect sleep, anxiety, depression, and academic performance in college students. We seek to understand the complex relationship between social media use, mental health, and academic achievement, offering valuable insights into these dynamics. According to the research (Bahrami et al., 2021) students' academic performance is essential because it propels them towards their objectives. There is a study that shows that severe mental distress such as anxiety and depression is correlated with poor academic performance. This indicates a potential link between mental health issues and academic outcomes. The heavy reliance on social media has deeply impacted college students' mental health and their academic performance in several different aspects. (Begdache et al., 2019) However, several studies and research have proven that social media impacts students differently in their daily mental states, such as anxiety, depression, sleep, and academic success. It is vital to develop effective supporting strategies for the usage and understanding of these platforms. In 2024, global internet users spent an average of 143 minutes daily on social media, down from 151 minutes the previous year. Brazil leads with an average of 3 hours and 49 minutes, surpassing the U.S. at 2 hours and 16 minutes. Worldwide, social media penetration stands at 62.3%, highest in Northern Europe at 81.7% and lowest in Eastern and Middle Africa at about 10%. Users utilize social media for social connections, news, entertainment, and sharing content, but it also poses privacy concerns, political divides, and distractions from daily tasks (Dixon, 2024). We've assumed that using social media excessively may have an impact on students' academic performance and mental well-being. Another study from Pakistan (Zafar & Muhammad Bin Mobin, 2023) social media usage experienced a tremendous increase, with 53 million active users by 2021. It provides connectivity and information sharing, but there are threats to one's mental health as well. Excessive usage of social media in Pakistan has been associated in studies with higher levels of anxiety, depression, and insomnia. Youth in Pakistan are frequently the victims of cyberbullying, which exacerbates mental health problems. This has proven that excessive social media use may disrupt sleep, increase anxiety, and contribute to depression among students. The current solution is to use an intervention using novel online imagery (NOI). This intervention, which aims to lessen cravings and usage of the popular social media platform Instagram, was developed based on the principles of Functional Imagery Training (FIT). The online guided mental exercises that comprise the intervention are designed to help participants create clear mental images of their ideal selves and set goals related to cutting back on Instagram usage. (Ryan & May 2022) In this paper, the uniqueness of our article is focusing on demographic groups and comprehensive research objectives and questions. We specifically target a certain demographic group with our study. This particularity makes it possible to analyse social media use and its effects on this group more specifically, which may reveal insights that are not visible in more general studies. Furthermore, a broad range of topics connected to social media use and its effects are covered by our research questions and objectives, including academic performance, anxiety, depression, and sleep quality. This all-encompassing approach guarantees a thorough investigation of the topic's various facets.

1.1 Problem statement

In recent years, college students have faced increasing challenges with mental health and academic performance, which could be linked to their extensive use of social media. Despite increased awareness, there is a shortage of research on the effects of social media use for education and entertainment on mental health and academic performance, making it difficult to develop effective solutions to address this matter. To shed light on this crucial but little-studied issue, our study intends to investigate the association between social media use, mental health outcomes, and academic achievement among college students.

1.2 Research contribution

The results of this study contribute the fact that what is the main factor that affects academic performance among the educational and entertainment social media apps that cause mental health including sleep, anxiety and depression and came up with appropriate strategies to help students with academic performance issues. This provides insights to stakeholders on the possibility of developing targeted strategies and interventions to support students experiencing academic challenges stemming from these problems.

Conceptual framework

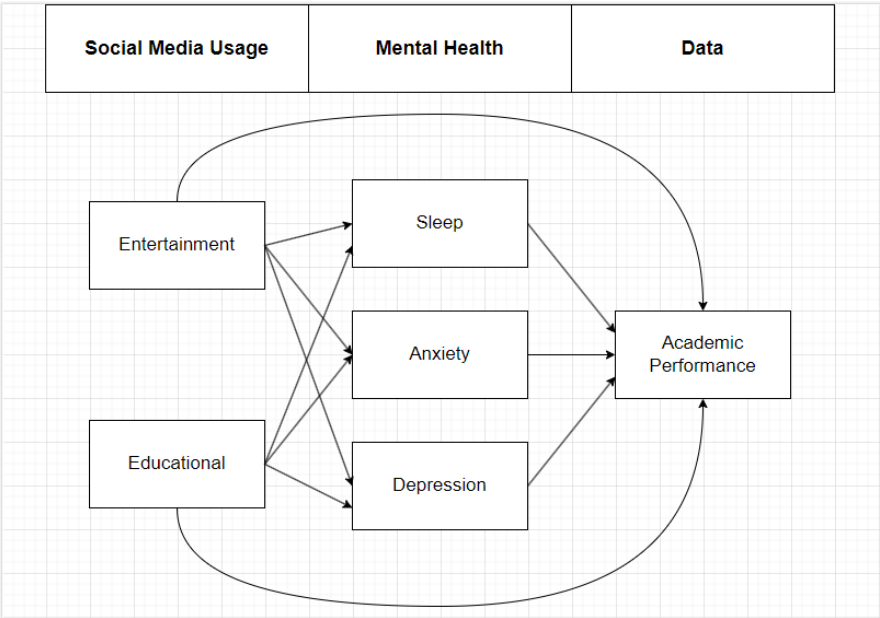

Figure 1: Conceptual framework

2.0 LITERATURE REVIEW

2.1 Social media for entertainment use impact on sleep

The relationship between social media for entertainment use and sleep has been extensively studied. In (Oche et al, 2019) research, young people's sleep patterns and academic performance have been affected. The study highlighted the prevalence of social media usage before sleep, which contributes to sleep disorders like insomnia. (Pusparani, 2021) It is said that the inability to get to sleep or stay asleep, even when given the chance, is known as insomnia. According to a survey done in Saudi Arabia by Manjur and his team, a sizable percentage of college students put off going to bed, with 46% sleeping between 11 p.m. and 12 a.m. and 39% sleeping between 1 a.m. and 2 a.m. The majority of respondents (68%) said that using social media causes them to stay up later than usual (Kolhar et al., 2021). In a male university, the research found that the majority of respondents (145 total) had poor sleep quality, moderate to high dozing chances, and went to bed after midnight. One-fifth slept less than 8 hours daily. (Aljasem et al., 2020). The findings indicate that a majority of university students experience issues with sleep quality and the amount of time they sleep. Another study said that in Sri Lanka, Facebook emerged as the predominant social media platform among the surveyed students, primarily utilized for entertainment. Furthermore, some students admitted to engaging with social media before retiring to bed. Intriguingly, despite this pre-sleep usage, a considerable number of students reported experiencing good sleep quality. (Silva et al., 2023) However, another study has demonstrated that the majority of university students' usage of social media right before bed causes them to lose sleep. The study done by (Kolhar et al., 2021) shows that individuals frequently use social media late at night, which causes inconsistent sleep patterns and sleep deprivation. Research indicates that insufficient sleep has adverse effects on mood, learning, and attention focus. It is also associated with several health problems, including diabetes, obesity, and hypertension (Kolhar et al., 2021).

2.2 Social media for educational use impact on sleep

A rising tendency has resulted from students using social media extensively for educational purposes. Students reported using social media extensively for educational purposes, and many of them thought it was beneficial for promoting learning, communication, teamwork, and knowledge growth. (Zulfiqar et al,2022) Nevertheless, research has shown that the vast majority of university students

(97%) use social media, mainly for non-academic reasons like chatting (35%) and passing time (43%). Only a tiny fraction (1%) utilized social networking sites for academic purposes, according to research found by (Kolhar et al., 2021) and several studies are arriving at the same conclusion that students often use social media for entertainment purposes (F. A. Yebowaah et al, 2020). According to the statistics from Virtual University, bachelor's degree holders use social media more frequently and for educational reasons than master's degree holders. It is noteworthy that the most popular social media platforms for education are Pinterest and YouTube, whereas Facebook's educational use is decreasing even though it is the most advertised platform because of its advantages for cooperative learning. The two that are least frequently utilized for educational reasons are Instagram and Twitter. (Leon et al, 2019) Another study from South Africa explores how university students use social media for learning, with a special emphasis on sites like Facebook, Zoom, YouTube, Twitter, and others. The conclusion is that social media is widely used for academic purposes, with Facebook being the most popular platform globally. The studies also emphasize the many advantages of social media use in the classroom, including improvements in networking, learning, cooperation, content sharing, and access to scholarly resources. Challenges such as the duration of time spent on social media and possible sources of distraction are also mentioned. Overall, the study emphasizes how important social media is for boosting academic experiences and supporting student learning activities (Kutu et al, 2022). Lastly, research done by Wang in 2021 from the USA concludes that larger social networks are linked to less sleep, and a student's sleep levels are influenced by their peers' sleep patterns. While no consistent decline in sleep quantity over time was observed, daily fluctuations were associated with changes in network size and composition. Specifically, as students' networks grow, they tend to sleep less with or without educational usage of social media. (Wang et al., 2021) In conclusion, while social media can be a useful tool for educational purposes, it is essential for university students to manage their use of these platforms, particularly before bedtime, to avoid the negative impacts on sleep quality and academic performance.

2.3 Social media for entertainment use impact on anxiety

The pervasive integration of social media into daily life facilitates connections among users, allowing them to share personal content with their online "friends". However, this constant exposure to social media platforms has been linked to heightened levels of social comparison, potentially exacerbating mental health issues such as depression, anxiety, and social anxiety among young adults, as evidenced by J.E. Bettmann et al. (2020) research correlating higher screen usage to higher occurrences of depressive symptoms and anxiety (Lai et al., 2023; J. Brailovskaia et al., 2020; J. E. Bettmann et al., 2020). A research carried out by Anto et al. (2023), found that social media platforms often facilitate upward social comparison, where individuals compare themselves to others who appear more successful, attractive, or happier. This comparison can lead to feelings of inadequacy, low self-esteem, life dissatisfaction, and increased social anxiety (Anto et al., 2023; Lai et al., 2023). Moreover, the fear of missing out (FOMO) on social events, news, or experiences portrayed on social media can create anxiety and a sense of exclusion. Making users constantly check for updates and feeling the need to respond immediately can exacerbate feelings of anxiety and inadequacy (Bettmann et al., 2020). Seeking validation through likes, shares, or followers on social media can become a source of anxiety. The need for external validation and the pressure to maintain a certain online image can contribute to heightened anxiety levels. Social media is a social arena where they get recognition and acceptance from others. (Hjetland et al., 2021). Based on the research by Lai et al. (2023), passive consumption of content on social media, such as scrolling through feeds without actively participating, can increase rumination, anxious thoughts, and fears related to interactions. This passive behaviour can intensify social anxiety symptoms. These factors collectively illustrate how social media use can contribute to the development or exacerbation of social anxiety by fostering negative comparisons, fear of missing out, dependence on validation, negative self-perception, and passive consumption habits that fuel anxious thoughts and behaviours.

2.4 Social media for educational use impact on anxiety

A range of studies have explored the use of social media in education, highlighting both its potential benefits and challenges. In educational contexts, social media can provide educational resources and opportunities for skills improvement, but it can also exacerbate social anxiety disorders. Participants often compare their online personas to real-life interactions, leading to anxiety in face-to-face

situations (Shu, 2023). Furthermore, Shu (2023) and D. Höttecke et al. (2020) both issue alerts regarding the detrimental effects of problematic social media use, particularly about learning languages and mental health. They emphasize the importance of integrating media literacy into education to help students experience less anxiety. Not only that, anxiety can also occur from an academic comparison between students on social media resulting in fear of missing out (FOMO). A particular student posting their study result may also make an individual feel anxiety about their incompetence in completing work more efficiently than others. To reduce the anxiety of youth in university, Vandeyar (2020) and Beemt et al. (2019) both emphasize the need for a well-considered, evidence-based approach to integrating social media into the classroom, with Vandeyar specifically noting its potential in resource-constrained contexts. These studies collectively underscore the importance of thoughtful and strategic use of social media in education, while also acknowledging the potential risks.

2.5 Social media for entertainment use impact on depression

The importance of social media entertainment applications such as TikTok, Instagram and Twitter In lives keeps increasing and the youths are the most vulnerable to the issues in this virtual world. Two reasons will increase the rate of depression caused by social media use, the first one is addiction. The results have shown that the low addiction level of a 14-year group that is almost entering the age of youth increases with age up to 17 years (R.Kant., 2020). Therefore we can conclude that along with the age of the youth increase, the increase of the addiction level and lastly increase in the rate of depression as the research from (Haand & Shuwang, 2020) showed that higher levels of social media addiction correspond to increased levels of depression and the study reveals that depression can significantly predict social media addiction. The second reason of impact depression from social media entertainment is the time spent on social media. The increasing amount of time spent on social media will increase the rate of depression. The number of youth depression increases according to the analysis by Rahmatullah Haand (Arias-de la Torre et al., 2020). Additionally, studies like the one conducted by Haand (2020) in Afghanistan have shown that social media addiction can have a positive correlation with depression among university students, further underlining the importance of considering the time spent on social media as a factor influencing mental health outcomes (Haand, 2020). The time spent and addiction to social media are slightly causing depression which increases the 13% of the rate of causing depression (Liu et al., 2022; Haand & Shuwang, 2020). The way that young people use social media is the true issue. A systematic review of studies on the influence of social media use on depression found that heavy social media use is associated with an increased risk for depression, anxiety, loneliness, self-harm, and suicidal thoughts (Keles et al., 2020). Exposure to negative experiences on social media, such as cyberbullying, unhealthy social comparisons, and feelings of inferiority, can contribute to depressive symptoms (Lee et al., 2023; Keles et al., 2020).

2.6 Social media for educational use impact on depression

Using social media for educational purposes can be done in many ways such as staying updated on current events via Facebook, acquiring coding skills through YouTube tutorials, and participating in virtual classes via platforms like Zoom. For example, increased use of YouTube and Instagram may result in a perceived information overload, potentially contributing to feelings of depression (Matthes et al., 2019)(Reis, 2022). Furthermore, the spread of fake news on social media platforms can increase anxiety and depression, affecting students' mental health (Rocha et al., 2021) for instance, distributing false information during the COVID-19 pandemic has been related to higher levels of depression. The study revealed that 93.3% of those exposed to COVID-19 news for extended periods may have prevalent symptoms of depression, This emphasizes the negative effects of fake news and misinformation about COVID-19 on depression (Torales et al., 2022). Moreover, social media platforms used for education frequently require continuous connectivity and engagement for example Google Classroom often used for education in universities. This can lead to ‘technostress’, as people may feel overwhelmed by the need to constantly be online, checking updates, responding to messages, and so on. This constant pressure can lead to feelings of stress and anxiety, which are frequently precursors to depression (Al-Youzbaky & Duraid, 2022). These factors highlight the complex interplay between social media use for educational purposes and its potential impact on students' depression.

Table 1: Covariates of academic performance in the previous studies.

Covariate		Detail Variables	Previous Studies
Entertainment	**Sleep**	Social media, Sleep pattern, Sleep duration, Sleep affectation, Awareness, Negative impact	(Oche et al, 2019)
		Insomnia, Insomnia Severity Index, Melatonin, Treatment	(Pusparani, 2021)
		Bedtime habits, Delayed bedtime, Social media effects, Mental Health Problem	(Kolhar et al., 2021)
		College students, Sleep disturbance, Sleep quality, Stress, Mood.	(Aljasem et al., 2020)
		Sleep cycle, Undergraduate students, Sri Lanka	(Silva et al., 2023)
	Anxiety	Social media use, social anxiety, college student, anxiety	(Lai et al., 2023)
		Social media flow, daily stress, depression, anxiety, and addictive social media use	(J. Brailovskaia et al., 2020)
		Young adult, depression, anxiety, social media use, assessment, treatment	(J. E. Bettmann et al., 2020)
		Social media, anxiety, university student, united kingdom	(Anto et al., 2023)
	Depression	sleep duration, depression status, and demographic factors	(Liu et al., 2022)
		measures of social media usage patterns, addiction levels, psychological impact	(R.Kant., 2020)
		social media usage, self-esteem, psychological well-being	(Haand & Shuwang, 2020)
		use of digital mental health interventions, user engagement, depression severity	(Arias-de la Torre et al., 2020)
		social media usage, psychological distress, emotional regulation	(Keles et al., 2020)
		physical activity levels, mental health outcomes	(Lee et al., 2023)
		measures of social media addiction, depression symptoms	(Haand, 2020)
Educational	**Sleep**	Students' Perceptions, Social Media Use, E-learning, Higher Educational Institutes	(Zulfiqar et al,2022)
		Sleep deprivation, Social interaction, Academic performance, Distraction from academic work	(Kolhar et al., 2021)
		Social Media, Academic Life, Information Literacy, Tertiary Students	(F. A. Yebowaah et al, 2020)
		Student engagement, Social media trends	(Leon et al, 2019)
		Academic purposes, Information Studies, University of KwaZulu-Natal (UKZN)	(Kutu et al, 2022)
		Sleep quantity, Sleep quality, Social networks, Peer influence	(Wang et al., 2021)
	Anxiety	Social media, higher education	(Vandeyar, 2020)
		Social media usage, classroom, language, mental health, foreign language anxiety	(Juan Shu, 2023)
		Natural-of-science education, social media	(D. Höttecke et al., 2020)
		Classroom, social media, literature review	(Beemt et al. 2019)
	Depression	educational attainment, depression symptoms	(Matthes et al., 2019)
		Information Overload, mental health	(Reis, 2022)
		Impact fake news, mental health	(Rocha et al., 2021)
		sleep quality, smartphone addiction levels, and mental health outcomes	(Al-Youzbaky & Duraid, 2022)
		Impact of news, depressions	(Torales et al., 2022)

3.0 RESEARCH METHODOLOGY

3.1 Materials and methods

A cross-sectional study is conducted at Tunku Abdul Rahman Management Technology (TAR UMT) among a particular group of young scholars. The ones who accomplish this are the TAR UMT students pursuing bachelor's degrees, diplomas, and foundation courses. for 10 days at the TAR UMT (Kuala Lumpur Campus). This population was selected through a simple random sampling technique and convenience sampling approach because the researchers are studying within TAR UMT, which makes using questionnaires to collect data easier. Utilizing questionnaires is primarily accomplished so that we may obtain more data from the TAR UMT students. To provide the students with a validated question and a response, we design the survey form by referring to the questions from the website or sample form. The main idea behind the population selection is that TAR UMT students fulfill the data criteria of youth scholars who utilize social media, allowing us to obtain more insights into the impact of social media usage on youth mental health in TAR UMT. Distribution channels for the Google survey form include social media and personal interaction. 160 individuals in total took part in this survey.

The questionnaire is divided into seven parts, which include Section A (demographics), Section B (entertainment), Section C (educational), Section D (sleep), Section E (anxiety), Section F (depression), and Section G (academic performance), as shown in Table 1, in sequences accordingly. Section A consists of one multiple-choice question for gender selection and one numeric input for age. In sections B to F, a linear scale of 1 to 5 is used, where 1 strongly disagrees and 5 strongly agree. In section D, sleep, there is only one time input in the questionnaire to get an accurate input of bedtime. Lastly, section G—academic performance—inputs the CGPA. Mostly, the question is designed using a linear scale to make it easy for the respondent to understand and answer the question. The data collected from the questionnaire will be cleansed and analyzed by IBM SPSS Statistics 26 and Process Macro. Mental health problems and social media usage will be calculated and reported using IBM SPSS statistics 26, including two social media usages—entertainment and educational—and three mental health problems: sleep, depression, and anxiety (H1–H6). Process macro is used to test the relationship between mental health problems, social media usage, and academic performances (H7–H17). Pearson correlation is used to measure the linear correlation relationship between the variables (social media usage, mental health problems, and academic performances). Mediating analysis is to check whether the effect of the independent variable (entertainment and education) on the outcome can be mediated by the changes in the mediating variable (mental health).

Table 2: Questionnaires

Questionnaire item	Resources
Section A Demographic: Gender Age	
Section B Entertainment: I use social media for online shopping I use social media to watch movies/shows I use social media to listen to music I use social media to play online games I use social media to watch video clips about celebrities I use social media to download music/video I use social media to post photos/update my status I use social media to watch humorous/funny video clips. I use social media to discuss assignments with classmates I use social media to chat with my friends	(Tin Tin Ting et al., 2023)
Section C Educational: I use social media to communicate with teachers/classmates(for educational purposes) I use social media to read important announcements from colleges/industries. I use social media to submit articles	(Tin Tin Ting et al., 2023)

Questionnaire item	Resources
I use social media to watch educational videos	
• **Section D (Sleep) (1-5 Rating Questions):** I usually take a long time to fall asleep. What is your usual bedtime?	(Tin Tin Ting et al., 2023)
I have a poor quality of sleep I often lose sleep for being online My bedtime is the usually not the same every day I have trouble waking up I often listen to music while sleeping I often get interrupted sleep Sound and light affect my sleep I tend to use my phone before sleep	(45 Sleep Survey Questions for Your next Research Questionnaire - Forms.app, n.d.)
• **Section E (Anxiety) (1-5 Rating Questions):** I am comfortable with my physical appearance. I feel restless if I haven't used social media in a while. I often compare myself to other successful people through the use of social media. I am not able to stop or control my worries. I am worrying too much about different things. I have trouble relaxing. I have become easily annoyed or irritable I was always afraid, as if something awful might happen	(Anxiety Test, n.d.)
I have experienced shortness of breath I have felt panicked and overwhelmed by things in my life I have had trembling hands	(Online Test for Anxiety | Clinical Partners, 2018)
• **Section F (Depression) (1-5 Rating Questions):** I often have little interest in or pleasure in doing things. I often feel down, depressed, or hopeless. I often feel tired or have little energy. I have a poor appetite or am overeating. I often feel bad about myself. I have trouble concentrating on things, such as reading the newspaper or watching television I have thoughts that I would be better off dead, or hurting yourself	(Depression Test, n.d.)
• **Section G (Academic Performance)** What is your latest CGPA?	

4.0 RESULTS AND DISCUSSIONS

4.1 Results

Table 3: Data from the demographics of the respondent

Demographic	Options	Number of Respondent	Percentage (%)
Age	18-20	32	20.00
	21-23	116	72.50
	> 24	12	7.50
Gender	Male	100	62.50
	Female	60	37.50
Current CGPA	3.50 - 4.00	110	68.75
	3.00 - 3.49	37	23.125
	2.50 - 2.99	9	5.625
	2.00 - 2.49	3	1.875
	< 2.00	1	0.625

The information from the respondent's demographic reports is shown in Table 1. We simply needed the age, gender, and current CGPa at this time. This provides the proportion for each of the three distinct response groups. In terms of gender, we received responses from 60 female and 100 male

students to our questionnaire. Additionally, the majority of students with CGPA values between 3.5 and 4.0 answered, making our results credible.

Table 4: Cronbach's alpha reliability of questionnaire questions

Sections	Number of Questions	Cronbach's Alpha
Entertainment	10	0.839
Educational	4	0.783
Sleep	9	0.626
Anxiety	11	0.857
Depression	7	0.854

Details regarding Cronbach's Alpha Reliability are given in Table 2. Our questionnaire has five separate tests. The entertainment test consists of 10 questions in total, and its reliability score is 0.839. The educational test has a reliability value of 0.783 and four items. The alpha of the nine sleep test questions is 0.626. The anxiety test consists of 11 items, with a reliability value of 0.857. The final test consists of seven questions measuring depression, with a 0.854 Cronbach's alpha. the information gathered from a 160-respondent sample. In summary, the data gathered are fairly reliable, except for the sleep test, which has a 0.626, which is lower than 0.7.

Table 5: Pearson correlation

No	Predictor	DV	Correlation	P significant	Result
H1	Entertainment	Sleep	0.164*	0.038	Accepted
H2	Educational	Sleep	0.158*	0.045	Accepted
H3	Entertainment	Anxiety	0.199*	0.012	Accepted
H4	Educational	Anxiety	0.117	0.139	Rejected
H5	Entertainment	Depression	0.120	0.129	Rejected
H6	Educational	Depression	0.109	0.170	Rejected
H7	Entertainment	Academic Performance	0.178*	0.024	Accepted
H8	Educational	Academic Performance	0.072	0.368	Rejected
H9	Sleep	Academic Performance	0.055	0.492	Rejected
H10	Anxiety	Academic Performance	-0.080	0.313	Rejected
H11	Depression	Academic Performance	-0.088	0.268	Rejected

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Based on Table 3, H1 is accepted because it shows a statistically significant positive correlation between entertainment and sleep ($r = 0.164$, $p = 0.038 < 0.05$). Similarly, H2 is accepted due to the significant positive correlation between education and sleep ($r = 0.158$, $p = 0.045 < 0.05$). H3 is also accepted as it demonstrates a significant positive correlation between entertainment and anxiety ($r = 0.199$, $p = 0.012 < 0.05$). However, H4, H5, and H6 are rejected because there are no significant correlations between educational and anxiety ($r = 0.117$, $p = 0.139 > 0.05$), entertainment and depression ($r = 0.120$, $p = 0.129 > 0.05$), and educational and depression ($r = 0.109$, $p = 0.170 > 0.05$), respectively. Moving forward, H7 is accepted based on the significant positive correlation between entertainment and academic performance ($r = 0.178$, $p = 0.024 < 0.05$). On the other hand, H8, H9, H10, and H11 are rejected because there are no significant correlations between educational and academic performance ($r = 0.072$, $p = 0.368 > 0.05$), sleep and academic performance ($r = 0.055$, $p = 0.492 > 0.05$), anxiety and academic performance ($r = -0.080$, $p = 0.313 > 0.05$), and depression and academic performance ($r = -0.088$, $p = 0.268 > 0.05$), respectively. These findings collectively suggest that entertainment, sleep, anxiety, and academic performance are interrelated in the study context, while other relationships do not exhibit significant correlations.

Table 6: Mediating analysis

No	Predictor	Mediator	DV	DE	IE (BootLLCI, BootULCI)	Result
H12	Entertainment	Sleep	CGPA	0.0976	0.0043 (-0.0269, 0.0329)	Rejected
H13	Educational	Sleep	CGPA	0.0304	0.0070 (-0.0241, 0.0391)	Rejected
H14	Entertainment	Anxiety	CGPA	0.1135	-0.0240 (-0.0696, 0.0061)	Rejected
H15	Educational	Anxiety	CGPA	0.0387	-0.0106 (-0.0497, 0.0088)	Rejected
H16	Entertainment	Depression	CGPA	0.1075	-0.0134 (-0.0533, 0.0134)	Rejected
H17	Educational	Depression	CGPA	0.0387	-0.0106 (-0.0488, 0.0145)	Rejected

* p < 0.05, ** p < 0.01, *** p< 0.001

Based on the results presented in Table 4, all hypotheses (H12, H13, H14, H15, H16, and H17) were rejected. This implies that the indirect effects examined in the study were not statistically significant. Specifically, the indirect effects of Entertainment Use and Educational Use on CGPA through Sleep, Anxiety, and Depression did not show significant relationships. These findings suggest that factors other than social media usage, such as individual differences, study habits, and personal motivations, may have a more substantial impact on academic performance (CGPA) than the mediating variables explored in this analysis.

4.2 Discussion

Pearson correlation discussion

The correlation analysis unveiled significant associations between social media use for entertainment purposes and sleep patterns, echoing findings from prior studies. For instance, in the study by Oche et al. (2019), social media usage before sleep was linked to sleep disorders like insomnia among young individuals, aligning with the accepted correlation observed in (**H1**). This suggests that social media's influence on sleep, as highlighted by previous research, extends to young adults, impacting their sleep quality. Similarly, (**H2**) supports the notion that social media use, particularly for educational purposes, can also affect sleep patterns, consistent with the research of Pusparani (2021) indicating that disturbances in sleep can stem from pre-sleep social media engagement. As noted by Kolhar et al. (2021) in their study demonstrating the detrimental effects of late-night social media usage on sleep consistency, these established associations indicate the importance of controlling social media use before bedtime to avoid any disturbances in sleep quality. Therefore, it could be unclear whether or not students using social media for entertainment or educational purposes would still affect their sleep quality if they stayed up until late at night. Additionally, (**H3**) reveals a significant association between social media use for entertainment and anxiety levels, aligning with research by J.E. Bettmann et al. (2020) and Anto et al. (2023) that links increased social media exposure to heightened social comparison and anxiety among young adults. The possible reasons are that students compare themselves to social media, and as a result, having anxiety over some aspects is common. Moreover, (**H7**) highlights the impact of social media for entertainment on academic performance, consistent with findings by Kutu et al. (2022) emphasizing the benefits and challenges of integrating social media into educational settings. Due to students being overused on social media, this may result in them dropping their academic performance (CGPA). These accepted correlations underscore the complex interplay between social media use for entertainment and its effects on sleep, anxiety, and academic performance among young adults, highlighting the need for balanced and mindful social media usage practices. Based on the rejected results, there could be reasons for having a total sample of 160 students from a specific demographic only; therefore, we will improve on future results.

Mediating analysis discussion

The mediating analysis aimed to explore how anxiety, depression, and sleep disorders act as mediators in the relationships between social media usage (for entertainment or educational purposes) and academic performance (CGPA). Upon examining Hypothesis **H12**, it became apparent that the indirect effect of social media usage before sleep on academic performance through sleep was not significant. This outcome is in line with existing literature that presents mixed findings regarding the direct impact of social media on academic outcomes (Oche et al., 2019; Silva et al., 2023). One possible explanation for this result could be the complexity surrounding sleep patterns and their direct influence on academic performance. Factors such as time management, study habits, and individual motivation levels likely play crucial roles in determining academic success, despite potential disruptions caused by social media usage before sleep.

Similarly, Hypothesis **H13** was rejected, indicating that the indirect effect of social media usage for educational purposes on academic performance through sleep was not statistically significant. This finding echoes previous research suggesting that the type of social media use may not directly affect academic outcomes (Kolhar et al., 2021). The multifaceted nature of educational social media use,

coupled with other academic factors such as study techniques and course workload, might overshadow any direct influence on sleep quality and subsequent academic performance.

Going on to Hypothesis **H14**, its rejection indicates that, despite the established links between social media usage and elevated levels of anxiety and social comparison, the indirect impact of social media-induced anxiety on academic performance was not significant (Anto et al., 2023). Individual coping mechanisms, support networks, and mental health resilience likely play more substantial roles in determining academic outcomes than the direct impact of social media-induced anxiety.

Likewise, Hypothesis **H15** was rejected, suggesting that there was no statistically significant indirect impact of social media use for learning on academic achievement through worry. This result highlights the complex relationship that exists between social media use, anxiety, and academic performance. It also shows how students respond differently to educational social media platforms depending on their level of engagement with the course materials and their perceived self-efficacy (Leon et al., 2019). For example, educational social media platforms can help with learning and teamwork, but how much they raise anxiety levels may vary depending on the coping strategies each student uses, the difficulty of the assignment, and their general mental health (Kutu et al., 2022).

Moreover, Hypothesis **H16** was rejected, suggesting that there was no discernible indirect impact of depression brought on by social media on academic achievement.Even in the face of negative experiences related to social media use, such as cyberbullying and inferiority complexes, resilience, coping mechanisms, and social support networks likely play a significant role in reducing the direct effect of depression brought on by social media on academic achievement (Keles et al., 2020). Studies have indicated that although excessive usage of social media is linked to a higher chance of depressive symptoms, personal characteristics like coping strategies and social connections might mitigate these adverse impacts (Lee et al., 2023).

Last but not least, Hypothesis **H17** was rejected, demonstrating that there was no statistically significant indirect impact of using social media for education on academic achievement through depression. This result highlights the significance of taking into account a variety of characteristics, such as personal coping mechanisms, social connections, and general well-being, that have an impact on academic performance and go beyond social media usage alone (Matthes et al., 2019). For instance, educational social media platforms could provide worthwhile learning chances and resources, but variables like students' emotional resilience and support structures might have a greater impact on their immediate effect on depression levels and subsequent academic success (Reis, 2022).

5.0 CONCLUSIONS

The study reveals significant correlations between social media usage for entertainment, educational purposes, anxiety levels, and academic performance among university students. Specifically, social media use for entertainment is positively correlated with anxiety levels and academic performance. Conversely, social media use for educational purposes shows no significant correlation with anxiety levels or academic performance. These results emphasize the need for a nuanced approach to understanding how different types of social media usage impact various aspects of students' lives. Our findings indicate that every mediation analysis is rejected. These demonstrated that using social media for education or pleasure had no discernible effects on academic performance (CGPA) with mediating of anxiety, depression, or sleep. This underscores the intricacy of variables impacting scholastic achievements, including personal motivation levels, support systems, and coping strategies. These results are consistent with the contradictory findings from earlier studies about the direct effects of social media on academics. Furthermore, creating successful interventions and support plans for students in the digital age requires a thorough grasp of these variables.

The use of self-reported data, which could add bias or inaccurate responses, is one of the research's limitations. Clinical evaluations and digital monitoring data, for example, could be used as objective indicators of social media use and mental health outcomes in future research. Furthermore, the study's focus on a particular demographic subset at TAR UMT limited the applicability of its conclusions to other populations. To gain a deeper understanding, future studies could examine these

associations across a range of institutions and demographics. To clarify the mechanisms behind these correlations, future research endeavours may look into potential mediators and causal pathways. Interventions that support responsible social media usage and enhance college students' mental health outcomes should also be investigated and their efficacy assessed. In summary, resolving these issues and following up on new research avenues can help create focused treatments and tactics that promote students' academic achievement and well-being in the digital era.

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