How Tiktok Addiction Leads To Mental Health Illness? Examining The Mediating Role Of Academic Performance Using Structural Equation Modeling

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Abstract

TikTok is a popular social media networking site among students. The features of this application such as collaborating videos, and duet has attracted and impressed billions of users all around the world and in Pakistan too. This research has observed how TikTok addiction is affecting the mental health of university students. This study has also explored the mediating role of academic performance between the relationship of TikTok addiction and mental health of university students. Depression and anxiety are taken as the parameters to measure the mental health of university students. Total 400 students enrolled in University of Central Punjab selected through purposive convenient sampling technique were surveyed to collect data. The results revealed that TikTok addiction affects the mental health of university students. Furthermore, this study serves as a base to create awareness among the students that TikTok addiction may be harmful to them in several ways. Students must be encouraged to limit time on using TikTok and must focus on their education.

Keywords: TikTok addiction, mental health, academic performance, students.

Introduction

A dramatic change has been observed in the frequency of internet users globally from the year 2005 to 2014 (Freund & Weinhold, 2002). Technological advancement has not only changed the educational environment but social and economic domains also. Innovation and evolution in technology has changed the life of students in certain ways (Mese & Aydin, 2019). As social media is a platform where ideas, views, feelings and information is exchanged easily. It includes Facebook, YouTube, Instagram, TikTok, Twitter, Instagram and Snapchat. Students spend most of their time using different media applications and eventually getting addicted to it. Consequently, this addiction leads to low CGP's and grades affecting their education performance (Sabir et al., 2020).

Besides Internet, different platforms such as YouTube, Facebook, TikTok etc. are evidently overtaking the world and could be stated as a global consumer phenomenon (Camilia, Ibrahim, & Dalhatu, 2013).

In the last decade, because of invention of social media, online world has changed drastically. It has become easier for people to exchange feelings, opinions, ideas, pictures, sharing videos and all kind of personal information within no time. It has been studied that around 73% of Americans use social media websites

(Owusu-Acheaw & Larson, 2015). According to Lenhart et al., (2010), the age of most social media users ranged between 18-29 years old and possess a personal account on different social media platforms.

According to Owe (2008), the major portion of Pakistan's population consists of youth like college or university going students. Around 60% of the total population is comprised of youth which in number is 180 million. As per Statistics, 36 million youth age ranged between 20-24 years, and 50 million youth is of 18- 29 of age.

TikTok is a social media application that allows its users to create mobile videos and share them with friends. Previously it was known as Musical.ly has grabbed the attention of youth globally. Because of its diverse technology, design and usage TikTok has become one of the most downloaded Apple iOS video application, youngsters that comprised of half of the 500 million monthly users (Chen, 2018). A US-based market intelligence firm Sensor Tower declared that TikTok has become the most downloaded social application in Pakistan in the year 2019. Around 16.3 million people has downloaded the application between 1 January to 29 November 2019 (Shakeel, 2019, Hayat, et al. 2022).

A petition was filed by a citizen in Sindh to ban TikTok in Pakistan who stated that the medium is being used to spread immoral and unethical content. On this complaint, The Sindh High Court (SHC) banned TikTok until the next hearing i.e., 8 July 2021. In response, the team of TikTok stated that the creativity and passion of our community has brought joy to households across Pakistan and provided a home for incredibly talented creators". Moreover, they have added that they work while keeping the rules and regulations to serve millions of TikToker users and video creators in Pakistan for whom it is a platform for creativity, fun and vital economic opportunities in future. TikTok management took step to remove more than 6 million videos from the TikTok application in Pakistan in 3 months between January to March 2021 (Gulrez, 2021). After that, on April 1 2021 the ban of TikTok application was lifted (AlJazeera, 2021).

TikTok addiction has dramatically affected the youth. They utilize most of their time in making videos. They are not responsible towards their studies. They waste their time on making TikTok videos (The Nation, 2021). There are countless videos available on TikTok application, students watch videos and waste their time, in this way they get addicted to the application and they do not spend time on studies, which shows decreased grades (Dawn, 2021).

Addiction is normally associated with alcohol and drugs. Any activity which is not controlled by human beings is known as addiction (Harris, Nagy, & Vardaxis, 2014). In a technological context, excessive use of the internet results in technological dependency among the people (Kuss & Griffiths, 2012). With the passage of time, it has been observed that students are spending maximum time using social media that ultimately affects their academic performance and mental health (Ishaq, et al., 2019; Maguire & Pellosmaa, 2022). This 'addiction' results in affecting the physical health of the students. Students who have become addicted and dependents to social media, they think that their life is boring and empty without it. The outcomes of this addiction result in different physical and mental health problems such as affecting eye eight, feeling of aloneness, headache, stress, depression and anxiety (Maguire & Pellosmaa, 2022; Nalwa & Anand, 2003). Students use social media excessively that affects their education (Deka, 2015, Mussrat, et al. 2022).

Anxiety, depression, and stress are three major factors, which depicts mental health illness (Ali et al., 2021; Moore et al., 2016). Since CoVid-19 has prevailed these mental health problems are also on rise across all ages and genders (Ali et al., 2021). Because of lock down the usage of social media app, also increase and people become addicted of the social media platform, resulted in decreased academic performance,

and increased mental health illness (Zahra et al., 2021).

Problem Statement

Several studies have explored the addiction patters of digital media like Facebook, YouTube and Instagram However, very few studies have to analyze the impact of watching short-videos through TikTok and problems associated with its addiction as TikTok (Su et al., 2021). Previous literature also explains the relationship between TikTok mental health while several studies claim the excessive use of social media apps has negative effect on the academic performance of students. However, none of the research has explored the relationship of TikTok addiction and academic performance specifically. Therefore, this study bridges the gap by exploring relationship between TikTok addiction and academic performance, TikTok addiction and mental health problems and it further explores the mediating role of academic performance in the relationship of TikTok addiction and mental health problems.

Objectives of the Study

1. To explore the relationship between TikTok addiction on mental health of university students.
2. To explore the mediating role of academic performance between the relationship of TikTok addiction and depression among students.
3. To explore the mediating role of academic performance between the relationship of TikTok addiction and anxiety among students.

Hypotheses of the Study

H1. There exists a positive relationship between TikTok addiction and the poor academic performance of students.
H2. There exists a positive relationship between TikTok addiction and depression among students.

H3. There exists a positive relationship between TikTok addiction and anxiety.
H4. Academic performance mediates the relationship between depression and TikTok addiction.
H5. Academic performance mediates the relationship between anxiety and TikTok addiction.

Significance of the Study

As TikTok users are increasing day by day so are the effects. This study provides a comprehensive view how TikTok addiction is affecting the academic performance, depression and anxiety level of students and how academic performance mediated the relationship between TikTok addiction and mental health of university students. It also provides an opportunity for educational institutes as well as parents of university students to understand the impact of TikTok addiction on the academic performance of the students. Additionally, how this poor academic performance further create certain mental problems.

Literature Review

Herath and Hearth (2020) explored that watching TikTok videos has a negative influence on the students as they get addicted to it. Moreover, the researchers stated that more time spent on TikTok results in the poor academic performance of the students; hence, the students should keep time factor into consideration when using the application. Research conducted by Badri, Nuaimi, Guang, & Al Rashedi (2017) observed the effect of using social media applications like Facebook, WhatsApp, Instagram, TikTok etc. on the academic performance of the students. The findings showed that usage of social media apps by the students have both positive and negative outcomes. However, this is heavily relied on the time of using social media. Those who spend more time using these apps have poor academic performance. In addition, the excessive use of social media apps such as TikTok may affect

the learning attitudes and memory circuits, which if prolonged can be developed as a habit among individuals (Hyman et al., 2006). Undergraduate students involved in pathological Internet usage have more loneliness as compared to those who do not (Morahan-Martin & Schumacher, 2000). Different studies conducted in Pakistan have shown that students enrolled in undergraduate programs have higher chances of having loneliness due to excessive use of the internet (Saleem, Waseem, Khan, & Ismail, 2015).

TikTok addiction has a positive relationship with depression, anxiety, and stress (Sha & Dong, 2021). TikTok addiction links with higher levels of depression, anxiety, and stress (Maguire, & Pellosmaa, 2022). Numerous databases suggested that majority of the college students underwent mental health problems (Hunt, 2010). Different researches conducted on mental health and academic performance earlier have observed that there is a positive relationship between academic performance, and mental health factors like depression, age, gender and financial problems leads to poor academic performance. Depression is the most incurred problem among the students which has affected their mental health due to poor academic performance (Showalter, 2010). Excessive use of social media apps result into depression (Zaffar, Mahmood, Saleem, & Zakaria, 2015). Researchers Chen, Rubin, & Li (1995) conducted a longitudinal study in Shangai. and the results revealed that poor academic performance could lead to depression. A study conducted in rural China stated that poor academic performance results in increasing of depression and anxiety among students (Feng, et al., 2022). Kumar and Jejurkar (2005) inferred that academic performance was responsible for higher stress levels among undergraduates.

Conceptual Framework

The conceptual framework explains the independent, dependent and mediator variables in this research. TikTok addiction is an independent variable, depression and anxiety are dependent variable, and academic performance is a mediating variable.
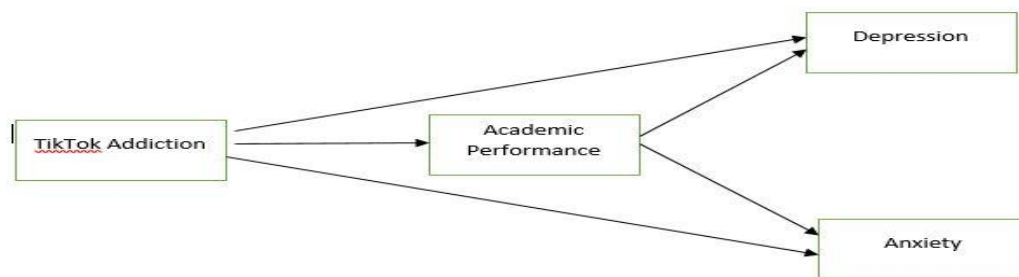

Figure 1: Conceptual Framework

Methodology

Quantitate research design has been used in this research. TikTok addiction is an independent variable, and the mediating variable is academic performance, a survey (N= 400) was conducted from students. Survey research means the gathering of data or information from people through their responses to questions (Ponto, 2015).

Survey

The questionnaire consists of four sections i.e., demographic information, TikTok Addiction Scale, Scale for Academic Performance, Scale for Depression and Scale for Anxiety. After

developing a questionnaire, a pilot study was undertaken to test the reliability of instrument.

Sample

An online survey was conducted from 400 students enrolled in the University of Central Punjab. The division of students who participated in a survey for collection of data was 252 from the Bachelor program, 130 from the master's program, and, 18 from the M.Phil. program. Both genders; male and female were included as participants in the study. An online questionnaire was developed and circulated among students in Lahore. Convenient sampling technique was used to select the students.

Measures

The first part of the questionnaire was based on demographic information such as gender, enrolled program, university name, etc. The second part contained the questions related to TikTok addiction and the opinions of the students on them. The third and fourth portion of the questionnaire was based on the mediating role of academic performance; and depression and anxiety respectively among students in Lahore. Four scales used in order to collect data are mentioned below:

TikTok Addiction Scale Student Scale

The TikTok addiction Scale Student Scale by Sahin (2018) has been adapted from Social Media Addiction Scale. Likert Scale has been used, comprising of total 29 statements ranging from 1= strongly disagree to 5= strongly agree in this research. The minimum value was 29 and maximum value was 145. The value of Cronbach alpha was 0.79.

Scale for Academic Performance

To measure the academic performance of students, The Scale for Academic Performance by Osharive (2015) has been adapted and utilized in this study. Scale for Academic Performance is further divided into five sub scales i.e. Students Addictiveness to Social Network (The minimum value = 29 and maximum value = 145 , Cronbach alpha = .79 and Academic Performance (The minimum value = 4 and maximum value = 20, Cronbach alpha = .84), Exposure of Students to Social Media Network and their Academic Performance (The minimum value = 4 and maximum value = 20, Cronbach alpha = .82) and Use of Social Media and Students' Academic Performance (The minimum value = 4 and maximum value = 20, Cronbach alpha = .91)**.** Whereas two sub scales were excluded i.e. 'Gender usage of social media and 'Age usage of social media' as they were not part of this research to be examined. A total of 20 questions were included in this scale. A 5-point Likert Scale ranging from 1= Strongly Disagree to 5= Strongly Agree was used to collect opinion from the participants. The minimum value was 20 and maximum value was 100. The value of Cronbach alpha was 0.84.

Scale for Depression

The Center for Epidemiological Studies Depression (CES-D) Scale by Radolff (1977) has been has been adapted for data collection purpose, consisting0 of 20 statements. 5-point Likert Scale ranging from 1= Strongly Disagree to 5= Strongly Agree was used to collect opinion from the participants. The minimum value was 20 and maximum value was 100. The value of Cronbach alpha was 0.91.

Scale for Anxiety

The scale adapted and used to measure anxiety (Zimmerman, Chelminski, Young, & Dalrymple, 2010). A 5-point Likert Scale ranging from 1= Strongly Disagree to 5= Strongly Agree was employed to collect data from respondents. The questionnaire is based on 20 statements. The minimum value was 20 and maximum value was 100. The value of Cronbach alpha was 0.77.

Data Analysis Procedure

Data was analyzed using SPSS 25.0 version for initial data screening. PLS was used to test the hypothesis of the study.

Results and Discussions

The demographic details of the respondents' show that majority of respondents were male 224(56%) students, and majority fall 198 (49.5%) between the age bracket of 18-24 years. Majority of the students 252 (63%) were studying in bachelors level.

Table 1: Demographic Characteristics of Respondents

Item	Frequency	Percent
Gender		
Male	224	56%
Female	176	44%
Age		
18-24	198	49.5%
25-30	121	30.2%
31-36	81	20.2%
Education		
Bachelors	252	63%
Masters	130	32.5%
M.Phil.	18	4.5%
N=400		

Findings regarding times spent on TikTok shows that majority of students 189(47.3%) spend 1-2 hours on watching TikTok videos. Further analysis shows that very few 9(2.3%)

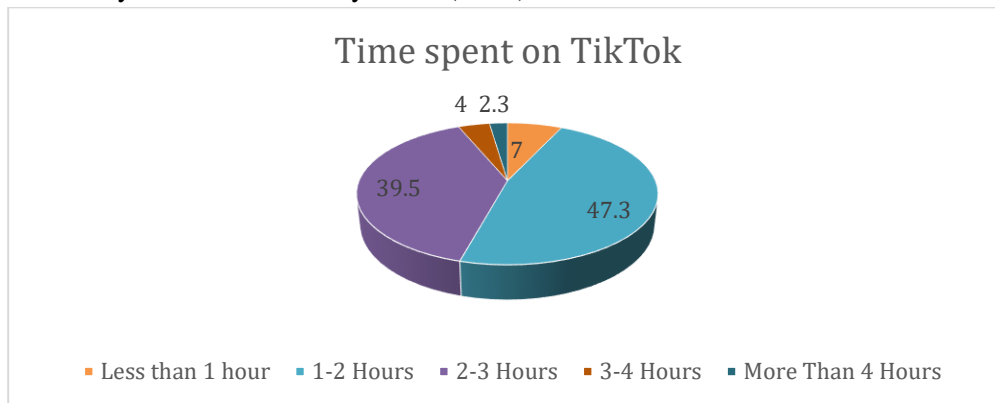students spend more than 4 hours with TikTok (see figure 2).

Figure 2: Frequency of Time Spent on TikTok

R^2 value is helpful in evaluating PLS-SEM structural models. There are many assumptions about the acceptancy level of R^2 value. In the opinion of Chin (1998), R^2 value of 0.67, 0.33

and 0.19 are considered as powerful, moderate and weak. In the below measurement model, R^2 value of depression is 0.19, anxiety 0.23.
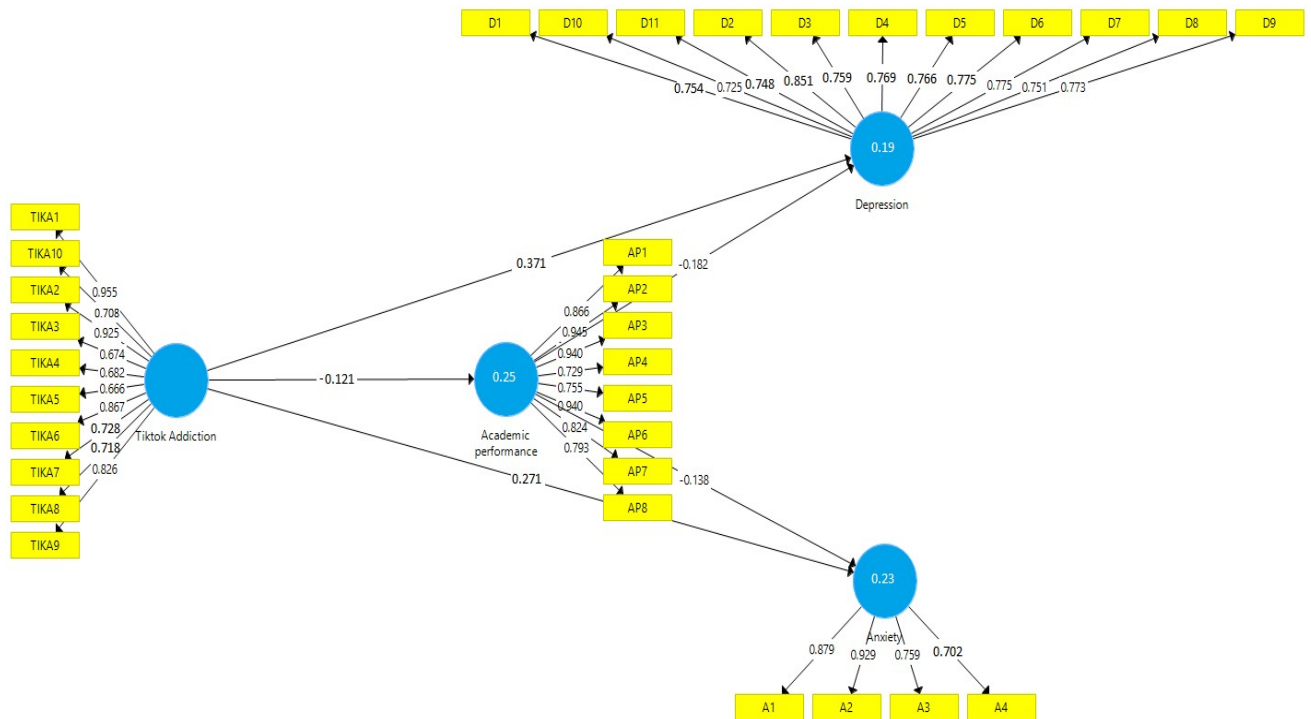
Figure 3: Assessment of Variance Explained in Endogenous Variables (Measurement Model)

The above measurement model was created through the PLS Algorithm depicting the values of path coefficients (β) in the inner model, loading of items of different constructs in the outer model, and R square values in constructs.

Table 2: Assessment of Convergent Validity

Constructs	Cronbach's Alpha	Composite Reliability	AVE
TikTok Addiction	0.934	0.921	0.548
Academic Performance	0.946	0.955	0.727
Depression	0.828	0.851	0.524
Anxiety	0.786	0.829	0.576

Table 2 represents convergent validity of the constructs. The acceptable reliability value for internal consistency reliability and composite reliability is .70 (Hair, Risher, Sarstedt & Ringle, 2019). The results reveal that all the data is reliable and valid as the value of Cronbach Alpha is greater than .70. In addition, the discriminant validity criteria are also satisfied as shown in Table 3.

This structural model depicts the values of path coefficients and P-values can be seen in the inner model and T-values in the outer model.
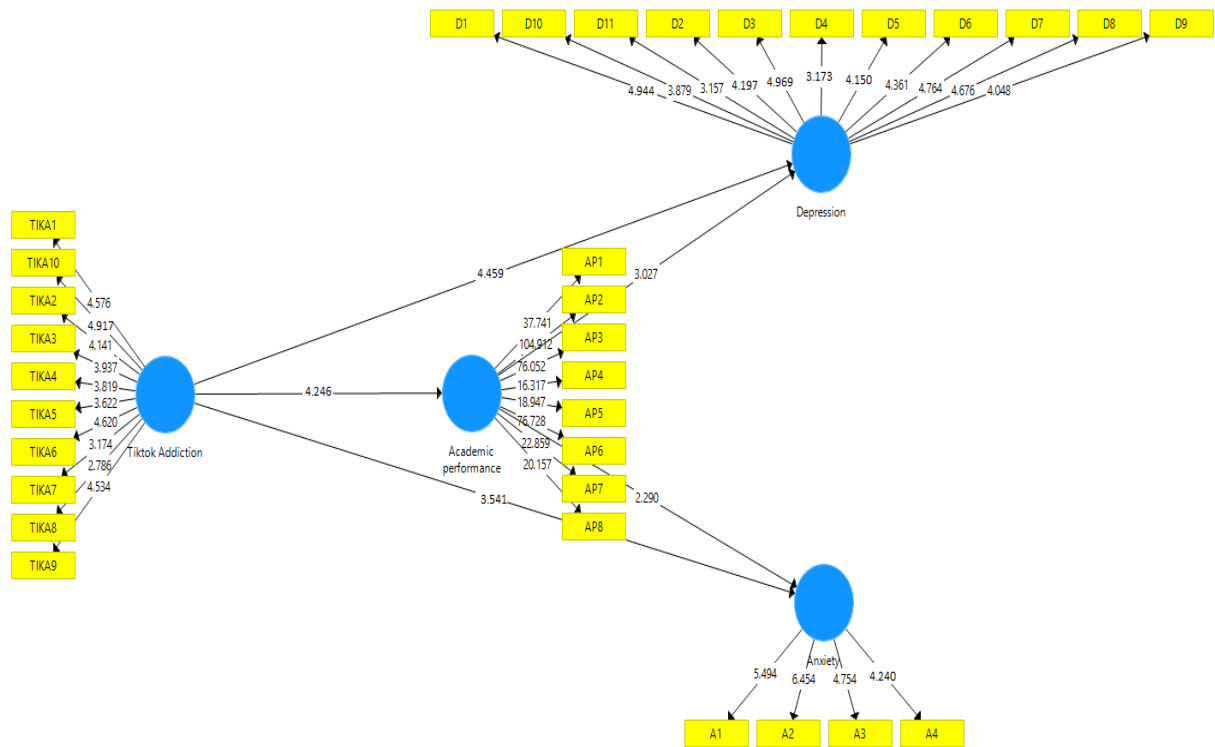
Figure 4: Structural Model

Table 3 Fornell-Larcker Criterion Analysis for Discriminant Validity

	1	2	3	4
1. Academic Performance	**0.853**			
2. Anxiety	0.133	**0.759**		
3. Depression	0.176	0.270	**0.597**	
4. TikTok addiction	0.121	0.240	0.250	**0.740**

Table 4 Results of Testing Hypotheses

	Original Sample (O)	Sample Mean (M)	Standard Deviation	T Statistics	P Values
TikTok Addiction-> Academic Performance	-0.121	0.074	0.097	4.246	0.001
TikTok Addiction -> Depression	0.371	0.020	0.103	4.459	0.03
TikTok Addiction -> Anxiety	0.271	0.058	0.075	3.541	0.01
Academic Performance -> Depression	-0.182	-0.193	0.060	3.027	0.003

Academic Performance -> Anxiety	-0.138	-0.146	0.060	2.290	0.022
TikTok Addiction -> Academic Performance -> Depression	0.29	-0.015	0.020	3.092	0.001
TikTok Addiction -> Academic Performance -> Anxiety	0.21	-0.012	0.016	2.050	0.02

N=400

The relationship between TikTok addiction and academic performance is significant (β = -0.121, t = 4.246, p = 0.001). This result clearly shows that as TikTok addiction increases the academic performance of students' decreases. These findings have validated the H1 "There is a positive relationship between addiction to TikTok and poor academic performance of students and are also consistent with the findings of Badri et al., (2017) that excessive use of social media apps such as Face Book, Instagram, TikTok etc. have negative effect on academic performance of students. It is also in line with the findings of Hyman et al. (2006) that excessive use of TikTok may affect the learning attitudes and memory circuits of youth, which ultimately results in poor academic performance.

The finding regarding the relationship between TikTok Addiction and depression among students is significant (β = .371, t = 4.459, p = .003). Analysis of the findings show that increased use of TikTok leads towards more depression. This result has clearly validated the H2 that there exists a positive relationship between TikTok addiction and depression among students. The analysis of the findings regarding TikTok Addiction and Anxiety depicted significant relationship between both variables (β = .271, t = 3.541, p = 0.01). This predicts that TikTok addiction leads students towards anxiety. Thus, another hypothesis of the study there exists a positive relationship between TikTok addiction and anxiety among students is validated by the findings. These findings are also consistent with the findings of Sha and Dong, (2021) who inferred that TikTok addiction has a positive

relationship with depression, anxiety, and stress. And are also inline with TikTok addiction links with higher levels of depression, anxiety, and stress (Hunt, 2010; Maguire, & Pellosmaa, 2022).

The result of the table 4 shows that academic performance and depression have negative relationship (β = -0.182, t = 3.027, p = .003). This result clearly shows that poor academic performance leads students towards depression. The findings further reveal the relationship between academic performance and anxiety is negative (β = -0.00, t = 2.290, p = .022). This result clearly shows that poor academic performance also create anxiety among students.

Academic performance is a significant mediator between TikTok Addiction and depression (β = .29, t = 3.092, p = .001). These results highlight that academic performance mediates the relationship between TikTok addiction and depression. Thus, the hypothesis "Academic performance mediates the relationship between depression and TikTok addiction" is validated by the findings of the study. Excessive use of social media apps result into depression (Zaffar, Mahmood, Saleem, & Zakaria, 2015). Chen, Rubin, and Li (1995) concluded that poor academic performance could lead to depression.

Academic performance is a significant mediator between the relationship TikTok addiction and anxiety (β = 0.21, t = 2.050, p = .002). These results revealed that academic performance mediates the relationship between TikTok addiction and anxiety. In this way, another hypothesis of the study academic performance

mediates the relationship between depression and TikTok addictions is validated by the findings of the study. It also supports the findings of Feng et al., (2022) poor academic performance results in increasing of depression and anxiety among students. Kumar and Jejurkar (2005) also inferred that poor academic performance was responsible for higher stress levels among undergraduates.

Conclusion

With the advancement of Technology, the mode of entertainment has changed with time. TikTok is an emerging tool widely used by the students for acting and entertainment purposes. The main purpose was to observe an association between TikTok addiction and academic performance. Referring to the findings, it is demonstrated the existence of a positive relationship between TikTok addiction and poor academic performance among the students in Lahore. Furthermore, the mediating role of academic performance in relation to depression and anxiety has been proven significant. The study also explored mental health problems with relation to TikTok addiction. TikTok has been widely used by the students that certainly has disturbed their mental health and impacted the academic performance negatively. For forthcoming research work, college students can be considered as a sample to study the impact of TikTok addiction on the academic performance as well as how addiction is disturbing their physical and mental health using quantitative method i.e. in-depth interviews for a deeper analysis of the area.

Recommendations

1. Lectures/Seminars should be arranged by the Universities to teach students about the excessive use of TikTok addiction and its effect on their academic performance.

2. Teachers must prepare assignments/quizzes for the students in a certain way to educate them about the health problems associated with TikTok addiction.

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