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Effects of Internet Addiction on Physical Activity, Sleep Quality, and Depression Among University Students in Lahore

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Author`s Contribution

[1] Conception and design, collection and assembly of data, and drafting of the article, [2 4] Critical revisions of the article for important intellectual content, [3] Statistical expertise, Analysis and Interpretation of the data.

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ABSTRACT

Background: Internet is one of the most widely used forms of communication globally. The amount of time spent on the internet increases, issues associated to internet overuse have surfaced, with behaviors such as searching and desiring in the absence of online connection. Addiction to the internet can also cause physical activities to be disturbed. Depression plays a significant role in the emergence of internet addiction.

Objective: To study the impact of internet addiction on physical activity, sleep pattern and depression among university students and how the use of internet affects their daily routine life.

Methodology: A sample size of 143 was selected. Internet Addiction Scale (IAT), International Physical Activity Questionnaire-Short-Form (IPAQ), Beck Depression Inventory (BDI-II) and Epworth Sleepiness Scale was used and the data was evaluated accordingly by using the Statistical Package of social Sciences (SPSS 20.0).

Results: The correlation was calculated between IAT Score, BDI-II Score, ESS Score and IPAQ, The results showed that there is a moderate positive correlation between IAT Score and BDI-II Score (0.422) with its p value being significant (p=0.000). A weak positive correlation is seen between IAT Score and ESS Score (0.297) and p value being significant (p=0.000). A very weak negative correlation is seen between IAT Score and IPAQ (-0.124) and it is non-significant (p=1.70). A medium positive correlation is seen between BDI-II Score and ESS Score (0.535) and it is significant (p=0.000). There is a very weak negative correlation between BDI-II Score and IPAQ Score (-0.232) and it is significant (p=0.01). Finally, a negative very weak correlation is seen between ESS Score and IPAQ (-0.289) and it is significant (p=0.001).

Conclusion: The conclusion of this research study shows that Internet addiction has a negative effect on physical activity, causes disruptive sleep pattern and can increase depression among university students in Lahore.

Keywords: Internet addiction, physical activity, sleep pattern, depression, depression

Introduction

The internet has become one of the most widely used forms of communication globally. As the amount of time spent on the internet increases, issues associated to internet overuse have surfaced, with behaviors such as searching and desiring in the absence of online connection. Internet addiction is characterized as excessive internet use and unrestrained use of the internet. According to the literature, the length of time spent online is the major symptom and cause for internet use to be classified as an addiction.[1]

Internet addiction is a sort of addiction that can be observed at any age i.e., psychological impacts such as depression[2], loneliness, perceived stress. However, in addition to its behavioral effects, internet addiction has a physical impact as well.[3]

Addiction to the internet can also cause physical activities to be disturbed. In the past, following activities have been classified as sedentary life style activities and hence decreases physical activity of such individuals. These are: message exchange, updating social media, and Internet surfing since they result in minimal energy use, such inactive behavior is linked to a variety

of health concerns, including obesity and metabolic syndrome and can also cause cardiovascular system issues as well.[4] All humans require proper and balanced nutrition in order to develop physically, mentally, and socially, as well as to be healthy and active. Physical activity and exercise are also essential in the management of obesity and other health-related issues.[5]

Sleep patterns aren't constant. Rather, your whole sleep duration consists of many cycles of the four-stage cycle of sleep that occur throughout the night. There are four phases of sleep: three of them are non-REM (non-visual-motor) sleep, and the fourth is rapid eye movement (REM) sleep.[6]

Stage /N1 is simply "dozing off," and it often lasts five to one minutes. The body hasn't relaxed during N1 sleep, but with brief motions, body and brain functioning start decreasing(6). In stage 2, the body becomes more docile, exhibiting lowered body temperature, relaxed muscles, and slowed heart rate and respiration. Brain waves alter at the same time, and eyes stop moving.[7] It is more difficult to wake someone who is in Stage 3 slumber, sometimes referred to as deep slumber. As the body relaxes further during N3 sleep, the heart rate, respiration rate, and muscular tone all decrease. In this stage, a sequence of neural activation known as delta waves is detected. Therefore, stage 3 is sometimes referred to as slow-wave or delta sleep.[7]

The brain becomes more engaged during REM sleep, reaching levels comparable to those during wakefulness. Simultaneously, the body experiences atonia, a transient immobilization of the muscles excluding the eyes and the breathing system. Even when the pupils stay shut they move rapidly. REM sleep is necessary for cognition such as memory, learning, and creativity.[7]

It has been established that sleeping is the best method to rest. Individuals feel energetic and eager for a new day after waking up following a good night's sleep. Lifestyle, environmental circumstances, employment, social life, economic situation, general health, and stress all have an impact on sleep quality. Sleep deprivation is a health issue that can prevent you from living a functional life and can progress to other issues(8). People that suffer from insomnia frequently have issues such as impaired perception and memory, learning difficulties, and a decrease in danger perception.[9]

Depression is called a mood disorder. It is typified by emotions that obstruct one's daily tasks, such as anger, sadness, or bereavement. There are many different ways that depression shows up. It could throw off your regular schedule, causing you to lose time and become less efficient. Relationships and several chronic conditions may also be impacted.[10]

Depression plays a significant role in the emergence of internet addiction. As a result, depression may be viewed as both an etiological component and a manifestation. Anyone can become an internet addict as a result of a depressive disorder caused by any social or psychological factor, or they might develop addiction-related depression after becoming an internet addict.[11]

The rationale of this study was to uncover the impact of internet addiction on key aspects of student well-being, including physical activity, sleep patterns, and mental health. Understanding these associations provided valuable insights for developing targeted interventions to address internet addiction and promote healthier lifestyles among university students in Lahore.

Methodology

An Observational Cross sectional study was conducted. Ethical Approval was taken from the ethical review comitte from University of Lahore with Ref No **(REC-UOL-/10-08/2022)**. In this study, 143 participants were selected from different universities. All participants were between the age 18-25 years. The duration of this study was 6 months. The study was conducted by using Internet Addiction Test (IAT), International Physical Activity Questionnaire (IPAQ) short form, Beck Depression Inventory (BDI-II) and Epworth Sleepiness Scale (ESS) and the data analysis was done by using Statistical Package for Social Sciences (SPSS). A correlation between IAT Score, IPAQ Score, BDI-II Score and ESS Score were calculated to check there positive and negative correlations.

Results

In this study the average value of age was 22,503±1.5513 with the minimum value at 18 and maximum value at 25. Also, out of the 143 participants that took part in it, 88 (60.1%) were female and 57 (39.9%) were male. After the data analysis the results showed that, the scoring of IAT showed that 21 participants are not internet addicted, 62 participants have mild internet addiction, 54 participants have moderate internet addiction and 6 participants have severe internet addiction. The MET score of IPAQ-SF shows that 54 participants are inactive (category 1), 47 participants are minimally active (category 2) and 23 participants are HEPA active (Health Enhancing Physical Activity, category 3). Data Analysis of BDI-II Score showed that 42 participants were not depressed. 38 had mild mood disturbances, 11 participants were on borderline clinical depression, 24 had moderate depression, and 14 had severe depression. Data Analysis of ESS Score shows that out of the 143 participants 67 have normal sleeping pattern, 26 have average sleeping pattern, 33 have excessive sleeping pattern

depending on the situation and 17 have excessive sleeping pattern.

The correlation was calculated between IAT Score, BDI-II Score, ESS Score and IPAQ, the results showed that a moderate positive correlation was seen between IAT Score and BDI-II Score (0.422) with its p value being significant (p=0,000) (Table I). A weak positive correlation was seen between IAT Score and ESS Score (0.297) and p value being significant (p=0.000) (Table II). A very weak negative correlation was seen between IAT Score and IPAQ (-0.124) and it is non-significant (p=1.70) (Table III).

Table I: Correlation between IAT Score and BDI-II Score. (n=143)

	IAT Score	BDI-II Score
IAT Score Pearson Correlation	1	0.422
Sig. (2 tailed)		0.000
BDI-II Score Pearson Correlation	0.422	1
Sig. (2 tailed)	0.000	

Table II: Correlation between IAT Score and ESS Score. (n=143)

	IAT Score	ESS Score
IAT Score Pearson Correlation	1	0.297
Sig. (2 tailed)		0.000
ESS score Pearson Correlation	0.297	1
Sig. (2 tailed)	0.000	

Table III: Correlation between IAT Score and IPAQ Score. (n=143)

	IAT Score	IPAQ Score
IAT Score Pearson Correlation	1	-.124
Sig. (2 tailed)	143	1.70
IPAQ Score Pearson Correlation	-.124	1
Sig. (2 tailed)	1.70	

Discussion

The result of this research shows that IAT has a moderate positive correlation with BDI-II Score which means that the more the people have internet addiction the more they will have depression. In the same way IAT has a weak positive correlation with ESS Score which consequently also means that people with more internet addiction will have more disrupted sleeping pattern. Finally, there is very weak positive correlation between IAT and IPAQ which means people with more internet addiction are less active. Over the last two decades, academics and specialists have focused on internet addiction. The person who created the Internet Addiction Test is Dr. Kimberly Young. The symptoms of internet addiction are measured by the IAT.

The test classifies addictive behaviour into four categories: lack of addiction, mild symptoms of addiction, moderate symptoms of addiction, and severe addiction concerns. Responses on a 5-degree Likert type scale are used to measure the degree of participation in internet activities.[12] The International Physical Activity Questionnaire (IPAQ) was developed in 1998 by a team of experts to allow physical activity surveillance based on an international standard.[13] The IPAQ-original SF's authors suggested using the "last 7 day recall" version for physical activity surveillance research.[14] The Beck Depression Inventory (BDI-II) is a self-reporting survey for measuring the levels of depression in healthy and disturbed populations. These observations were combined into 21 items, which were given severity ratings ranging from 0 to 3.[15] The ESS is a brief, self-administered survey that asks eight questions on the likelihood of falling asleep in a given common place circumstances. Every question has a score between 0 and 3. It generates a total score, which ranges from 0 to 24 points, that has been shown to correspond to the subject's degree of daytime sleepiness.[16]

This research examined Vietnamese teenagers and young people to investigate if there was a correlation between IA and physical activity. 589 Vietnamese adolescents and youths participated in a cross-sectional online survey. IA and degree of physical activity were assessed using the International Physical Activity Questionnaire - Short Form (IPAQ-SF) and the short-form Internet Addiction Test (s-IAT). According to the findings, 23.1% of the participants did not engage in any physical exercise. In Vietnamese children and teenagers, the study did not find any link between IA and physical activity.[17] Another research examined the connection between Korean teenage Internet addiction, sports involvement, and self-control. Confirmatory Factor Analysis (CFA) and structural equation modeling were used to examine a total of 345 pupils in South Korea (SEM). SEM found a strong, self-control-mediated effect of sports engagement on Internet addiction. The findings point to the value and necessity of sports and exercise programs for treating Internet addiction as well as other addictions.[18]

Examining how internet addiction mediates the link between loneliness and depression was the goal of this study. 452 college students, ages 17 to 31, which included 241 women and 211 males. Participants were subjected to the UCLA Loneliness Scale, Young Internet Addiction Test Short Form, and Indication Scanning List. Positive correlations between loneliness, sadness, and internet addiction have been found, according to correlation research. As per regression study, depression and web addiction are predicted by loneliness. However, depression is also predicted by internet addiction.

This finding suggests that internet addiction and loneliness are predictors of depression.[19] The original study's objective was to assess the connection between internet addictions among King Abdulaziz University students and sleep quality. In July 2017, a cross-sectional research with 511 students aged 18 to 25 was conducted. Students' sleep patterns and quality were assessed using the Pittsburgh Sleep Quality Index (PSQI), and their

usage of the Internet was measured using Young's Internet Addiction Test. Data analysis techniques included frequency distributions, chi-square, Pearson's correlation coefficient, and multivariate analysis. The findings revealed that 42.3 percent of participants had mild Internet addiction, 29.9 % had moderate addiction, and 1.8 percent had severe addiction. In contrast, 54.4 percent of participants had poor sleep quality. Sleep quality and Internet addiction were shown to be significantly correlated (p =0.00).[20]

Limitations: Convenience sampling might not fully represent all Lahore university students. Findings may not apply outside Lahore, limiting their relevance. Variations in individual perceptions and interpretations of survey questions may introduce inconsistency in data collection, potentially impacting the reliability of results.

Conclusion

The conclusion of this research study shows that Internet addiction has a negative effect on physical activity, causes disruptive sleep pattern and can increase depression among university students in Lahore

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