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ASSOCIATION BETWEEN DEPRESSION AND SOCIAL NETWORKING SITE USE: A CROSS-SECTIONAL SURVEY AMONG STUDENTS OF A MEDICAL COLLEGE IN PAKISTAN

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ABSTRACT

OBJECTIVE

To assess if there is any association between symptoms of depression and social media use among medical students in Pakistan.

STUDY DESIGN

Analytical cross-sectional quantitative research

PLACE AND DURATION OF STUDY

The study was conducted at HITEC Institute of Medical Sciences, Taxilla, Pakistan over a period of one year, from August 2019 to August 2020.

METHOD

The study participants were medical students. The total sample size was 410. Random sampling was used. Data were collected by using a structured questionnaire. Depressive symptoms were assessed using the MDI (Major Depressive Inventory scale). Time spent on social networking sites was measured using a modified SONTUS scale (Social Network Time Use Scale). The data was analysed with SPSS v21.0 software.

RESULTS

The study found that there was a significant association between Social Networking Site (SNS) use and depression. A total of 267 (65 %) students reported some form of depression. For SNS use, 163 (40%) were high users and 19 (4.6%) were extremely high users.

CONCLUSION

This research suggests an important relationship between social media usage and depressive symptoms. A high number of students were found to be severely depressed. This reveals a neglected area of mental health and needs to be addressed. Also, almost half of the respondents were high users of social networking sites, while most others were average users. This may indicate that excessive use of SNS might either be a contributing factor or a perpetuating factor for depression in medical students.

KEYWORDS

Depression; Mental Health; Pakistan; Social-Media; Students, Medical.

INTRODUCTION

The increased usage of social networking and the growing mental health issues have raised concerns among professionals all over the world. The incidence of depression has been increasing at a gradual pace, affecting the functioning and quality of life of millions of individuals around the globe. In 2010, the estimated worldwide economic burden due to mental disorders was about US$ 8.5 trillion, and this burden is expected to increase to twice this amount by 2030.[1] In Pakistan, the rates of mental health disorders are also on the rise, with anxiety and depression ranging from 22% to 60% of the general population.[2]

Young adults, such as medical college students, are exposed to various factors during their years of study, and multiple studies have documented high levels of depression, anxiety, and stress among medical students. A study examined the stigma among medical students towards depression and suicidal ideation and found a significant prevalence of depression in medical students; moderate to severe depression in 14.3%, and suicidal ideation in third- and fourth-year medical students was seen in 7.9%; and there was a significantly prevailing stigma among medical students regarding depression, anxiety, and suicidal ideation.[3] Thus, exploring a cause that might contribute to low mood and depressive symptoms among young medical students is crucial. The future healthcare providers must have optimum health themselves in order to provide care to others, and investigating the issues which might affect the mental health of medical students is necessary to make them into an effective workforce.

Evidence suggests that although a lot of factors contribute to low mood in young adults, the potential influence of social media (SM) use in relation to mental well-being is gaining interest. Zheng et al investigated the various negative consequences of excessive use of social networking sites on family, personal and professional life, using principles of the cognitive-behavioural model and social cognitive theory.[4] A study conducted in New Zealand established that the prevalence of depression was higher for medical students than the general population and explored various factors in a medical student's life that might contribute to the higher rates

of depression and anxiety, including various assessment tools, selection procedures, students' motivation, characteristics of the student population (such as Type A personality and perfectionism), resilience and the nature of the clinical environment.[5] However, the study did not explore the increased role of the internet, social media and social networking in the daily lives of medical students. This needs to be addressed in order to understand its contribution or relationship to the increasing prevalence of depression among young adults.

Clark et al discussed how social media sites could have both negative and positive consequences, based on how they were used; social networking sites benefitted people when they were used to form meaningful connections and bonds and harmed people due to social comparison and feelings of isolation.[6] A study conducted among students from a university in China revealed that the type of social networking site usage mattered; the study showed that students agreed that 'social' social networking site use was positively related to their wellbeing, while 'entertainment' type social networking site use was not.[7]

In Pakistan, a very limited amount of research has been done regarding any connection between Social Networking Site (SNS) use and depressive symptomology. SNS are "mobile- or Internet-based social platforms created and designed to enable users to communicate, collaborate and share content across contacts and communities."[8] Due to social pressures and easy availability of the internet among the young generation, social media use has increased from functional to problematic usage. This study was conducted keeping in view the lack of available data on SNS use and the presence of depressive symptomatology in medical students in Pakistan, as well as understanding the relationship between them. Understanding this association will result in better usage of SNS in their capacity to positively affect the mental health of future doctors and caregivers. The objective of this study is to look for a relationship between Depression and Social Network use among medical students in Pakistan. This can help improve the mental health of young adults by raising awareness and giving evidence-based recommendations regarding social networking site use.

METHOD

This analytical cross-section study was carried out for a period of 1 year (August 2019 to August 2020) among medical students at HITEC Institute of Medical Sciences in Taxila, Pakistan. Ethical approval was obtained from the ethical review committee of HITEC Institute of Medical Sciences (ERC/21/20, dated 5th June 2020) prior to the study.

The study population was MBBS (medical) students aged 18 to 25 years, from first to fifth years of medical college. A total sample of 410 students who were available on the day of the survey were chosen via convenience sampling technique with 82 students from each year. Informed consent was obtained from each participant prior to their involvement in the study. Exclusion criteria included students taking any psychotropic drugs or those who had suffered from a bereavement in the past six months. Those who refused to participate, returned incomplete questionnaires or missed entries were also excluded.

Instruments

A structured questionnaire was administered, including demographics, the MDI (Major Depressive Inventory) scale,9 and a modified SONTUS scale (Social Network Time Use Scale). The SONTUS scale was used for assessing the time expended on social networking sites (SNS).[10]

Major Depression Inventory (MDI):[9] It is a validated, brief, self-assessment tool that measures depressive symptoms based on international diagnostic criteria. It includes 12 items covering mood, energy, sleep, and other core symptoms, scored on a 6-point scale to assess severity over the past two weeks, ranging from none to all of the time (0 to 5). MDI can be used both as a depression severity scale by its total scale score from 0 = no depression to 50 = extreme depression, and also as a diagnostic scale following the algorithm of ICD-10 depression or of DSM-IV major depression. As a depression severity scale by its total score, the cut-off scores for no or doubtful depression are 0-20, mild (21-25), moderate (26-30), and severe depression (31-50).

Modified Social Networking Time Use Scale (SONTUS): The SONTUS scale was developed and validated by Olufadi,[10] and consists of 29 items with a Likert scale of 1 to 11, with 1 meaning that the participant did not use SNS during the past week, and 11 meaning the participant used it more than 3 times during the past week.

The scale was simplified to ensure better understanding of the questionnaire by participants and to reduce the time taken for the participants to fill out the questionnaire. The Likert scale was reduced from 1 to 4; the original scores of 1-3 were converted into 1, 4-6 were converted into 2 and so forth, with 1 meaning that the participant did not use SNS during the past week and 4 meaning the participant used it more than 3 times during the past week. Questions that were not relevant to the study population were removed, since those questions were about workplace use of SNS and the participant population were students, reducing the items to 20 questions in total.

The questionnaire was then validated in a pilot study conducted with 30 students from a medical college. Content validity was previously established as the data collection tool was validated and had already been used in various studies. Cronbach's alpha (α) was used to measure internal consistency and reliability using SPSS software Ver21 and was found to be 0.816.

Operational definitions

SNS, or social networking sites, are defined as 'mobile- or internet-based social platforms created and designed to enable users to communicate, collaborate and share content across contacts and communities'. The social networking sites included in this study were Facebook, Instagram, Twitter (X), LinkedIn and WhatsApp.

Depression was defined according to the DSM-5 criteria: 2 or more weeks of either low mood or disinterest/displeasure, along with five or more from the following criteria: depressed mood almost every day, anhedonia almost every day, major weight loss or gain, a deceleration of thought and decrease in body exertion, fatigue or energy loss, feelings of worthlessness or guilt, decreased concentration, persistent thoughts of death. For students who scored high on the MDI, they were provided support and options to link in with a mental health specialist for further care.

Data Collection

After obtaining approval from the institution, students were approached and consent was taken from them. Students were chosen at random, based on their availability on the day of the survey. They were first explained about the context of the survey, the need to assess mood and time spent on social networking sites, and that it would help us in improving care and mental health of medical professionals. The questionnaire was then explained in clear, simple and local language if they were not able to understand properly. They were also allowed to ask questions wherever they were confused or had a query. Students completed the questionnaire only after confirming their understanding of the questions and their right to withdraw from the study at any time.

Statistical Analysis

The analysis of data was done using the Statistical Package of Social Sciences (SPSS) version 21. For descriptive statistics, numerical variables were stated as means and standard deviations, and categorical variables were expressed as frequencies and percentages. The level of significance for rejecting the null hypothesis was 0.05 (less than 0.05 was significant). For inferential statistics, the chi-square test was used to look for any significant relationship among independent variables and dependent variables for categorical data.

RESULTS

A total of 410 medical students from the medical college completed the questionnaire. The sample comprised 34.9% males and 65.1% females, aged between 18 and 25 years, with a mean age of 20.95 years (SD±1.716). Approximately 48.3% of the medical students resided in homes and 51.7% in hostels. From the first to the fifth year of medical college, 20% of the students were selected from each year.

According to the MDI (Major Depressive Inventory Scale), depression was divided into four categories: no depressive symptoms, mild, moderate and severe depressive symptoms (Table 1).

Table 1
Severity of Depression Among Medical Students Using the MDI Scale.

Severity of Depression	Frequency	Percentage
No Depression	143	34.9%
Mild Depression	42	10.2%
Moderate Depression	64	15.6%
Severe Depression	161	39.3%
Total	410	100%

The scale used for SNS use was divided into four categories, ranging from low to extremely high users (Table 2). Almost half the respondents were average users of SNS, followed by almost 40% of the respondents being high users

Table 2
Social Network Site (SNS) Usage Among Medical Students Using the Modified SONTUS Scale.

SNS Usage	Frequency	Percentage
Low User	52	12.7%
Average User	176	42.9%
High User	163	39.8%
Extremely High User	19	4.6%
Total	410	100%

A chi-square test of independence was performed to examine the association between depression and social network site use. Approximately 30% of the students answered questions 2,3 and 8 (29.0%, 31.7% and 32.9%, respectively), i.e., loss of interest in daily activities, lack of energy and strength, and feeling restless or subdued most of the time. Approximately half of the respondents answered all the questions as having all these feelings some of the time (Table 3). The relation between these variables was statistically significant, $p < .001$, which depicted a clear association between the presence of depression and depression severity and SNS use.

Table 3
Association between Severity of Depression and SNS Use.

Severity of Depression	Low user n (%)	Average user n (%)	High user n (%)	Extremely high user n (%)	p-value
No depression	25 (17.5%)	78 (54.5%)	33 (23.1%)	7 (4.9%)	<0.001
Mild depression	5 (11.9%)	22 (52.4%)	15 (35.7%)	0 (0.0%)	
Moderate depression	12 (18.8%)	22 (34.4%)	27 (42.2%)	3 (4.7%)	
Severe depression	10 (6.2%)	54 (33.5%)	88 (54.7%)	9 (5.6%)	

Note. SNS: Social Network Site (SNS), n: frequency, and %: percentage.

DISCUSSION

This study revealed a strong association between depression and social networking site (SNS) use among young medical undergraduates. While some studies have shown mixed results or no correlation,[11] these findings align with previous research linking SNS use and depression.

The frequency of depression in this study was 65.1%, comparable to earlier research. Various studies showed medical students had anxiety, stress, and depression.[12] The reported prevalence rates include 51.3% among Indian medical students, 83.4% among Saudi students,[13] and 40.9% in Pakistan.[14] A separate study in Pakistan[15] found depressive symptoms in 45.5% of 437 medical students, similar to this

study's outcome.[15] Another 2017 study from a private Pakistani medical college reported depression and anxiety symptoms in 51.46% of students,[16] while a more recent study in Lahore found a 75% prevalence among 533 students.[17]

However, a meta-analysis of 195 studies across 43 countries before 2016 reported a much lower depression prevalence of 27.2%.[18] The past decade has seen a tenfold increase in social media use, with nearly 90% of young adults (18–29) using it by 2015. A meta-analysis suggests approximately 75% of medical students use SNS,[19] and Pakistani students are no exception.

In this study, all participants reported SNS use. Among the 410 respondents, 12.7% were low users, 42.9% were average users, 39.8% were high users, and 4.6% were extremely high users. Nearly half were average users, followed by high users. A study from East India found SNS usage among medical undergraduates to be 88.6%,[20] consistent with this study's findings.

The impact of SNS use is multifaceted. Previous research links it to depression, anxiety, stress, mood swings, eye pain,[21] and internet addiction.[22] Consistent with this study, research indicates that higher SNS use correlates with increased depression risk, largely due to excessive time spent online. Frequent social media use has been associated with mental health issues, including the 'Facebook Depression Phenomenon,' which is associated with prolonged online engagement, social comparison, and low mood. Studies suggest SNS exposure can negatively affect self-esteem and lead to adverse psychological outcomes.[23] Other effects include reduced in-person social interactions,[24] decreased attention span, and increased cyberbullying risks, all contributing to poor mental well-being.[21-24]

Conversely, some studies reported no association between SNS use and depression.[25] These mixed findings highlight the complexity of measuring this relationship, as SNS use is multifaceted. Regardless of directionality, these results are important for public health professionals and clinicians. Further research is needed to explore this relationship in greater depth and draw evidence-based conclusions.

It is also important to recognise that SNS interactions vary widely. This study measured total time spent on SNS rather than specific interactions. Prior research focused mostly on Facebook, while this study examined SNS use more broadly in relation to depression.

Limitations

The study's design limited interpretation to association, not causation. Sampling was based on student availability, introducing selection bias. The reliance on self-reported data increased the risk of reporting inaccuracies. The results from a single institution may not be generalisable.

CONCLUSION

This research explored, in particular, the impact of social network site use on mental health and found important evidence to suggest a positive correlation between the use of social networking sites and depression. A high number of medical students were also found to have depressive symptoms in this study. This study revealed a neglected area of mental health of the future health professionals, which needs to be addressed. These results provided an insight and fundamental data about mental health to establish strategies to reduce the burden among medical students.

Recommendations

Further studies with a larger sample size from various other medical colleges are warranted to clarify and contribute to the results of this present research. Longitudinal studies are needed to explore causality rather than investigating the simple association. Apart from SNS use, more factors need to be explored which contribute to depression among medical students. Numerous studies have already identified a few, with the stress of studies and exams, increased workload, etc. Lastly, as far as the current post COVID-19 pandemic world is concerned, measures like lockdowns and social distancing increased SNS use globally, and their effects need to be studied on students.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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2	Dr Humaira Mahmood	AFPGMI (Armed Forces Post Graduate Medical Institute), NUMS (National University of Health Sciences), Rawalpindi	Supervision of research, assisting in data analysis, providing critical feedback
3	Dr Sahar Riaz	Department of Psychiatry, Beaumont Hospital, North Dublin Mental Health Services (NDMHS), Health Service Executive (HSE), Ireland	Conception and design of research, drafting the article, critical evaluation of research
4	Dr Nimbal Imtiaz	AFPGMI (Armed Forces Post Graduate Medical Institute), NUMS (National University of Health Sciences), Rawalpindi	Assisting in data acquisition, critical evaluation of article, assisting in data analysis