



ORIGINAL ARTICLE

## The prevalence of internet addiction and its association with depression among medical students.

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**ABSTRACT... Objectives:** To see the prevalence of internet addiction among medical students and its association with depression. **Study Design:** Cross-sectional study. **Setting:** Aziz Fatima Medical College, Faisalabad. **Period:** Sept 2021 to Oct 2021. **Material & Methods:** The participants were medical students of 1<sup>st</sup> to Final year MBBS. Study duration was 2 months. Ethical approval was taken beforehand. The total sample size was 440. Non-probability purposive sampling was done. The inclusion criteria were those students who use internet, gave consent and filled out the questionnaire. A validated and structured questionnaire was used. The data was analysed on SPSS 25. Confidence interval was set to be 95% with 5% margin of error. **Results:** Depression was found in 228 (51.8%) participants while internet addiction was present in 163 (37%) of participants. Significant relationships were found ( $p = \leq 0.05$ ) between internet addiction, depression and different variables like gender, cost per month on internet usage, hours spent on social media in a day, use of social media late night, skip/delay meal while using social media, use of social media immediate after wake up in the morning, use of social media before sleeping. **Conclusion:** Concerns should have been raised about the rising percentage of internet addiction and depression among medical graduates. The evaluation of characteristics that are strongly linked to internet addiction can aid in the development of thorough activities directed at spreading awareness regarding the dangers and determinants of internet addiction in high-risk populations.

**Key words:** Addiction, Depression, Internet, Medical.

### INTRODUCTION

Websites and programs that allow users to produce and share content or participate in social networking are referred to as social media. Social media usually involves Facebook, WhatsApp, Twitter, Instagram etc. It includes all tools and kits which gives a person opportunity for freedom of expression, give a chance to share ideas with each other and it makes a whole world a global village.<sup>1</sup> Addiction is a term used to describe unhealthy behaviors that have adverse consequences. Addiction of social media is the leading cause to a huge list of psychological problems which includes anxiety, irritability and an addicted person is unable to keep himself away from the social media.<sup>2</sup> This is the biggest hallmark of the social media that the majority of addicts feel obligated to engage in such pursuits that develop

into hazardous routines, compromising with other critical aspects of their lives.<sup>3</sup>

In past, communication among people was not easy due to long distance. But now seven continents of the world are in one's fist owing to advances of social media. This advancement has been there since late 70's. From ancient days of early chat rooms, E-communication has evolved into today's social media. The first encyclopaedia, Wikipedia, launched the "New Golden age" of social media in 2001. It was followed in 2004 by Facebook and twitter in 2006. Advances in social media made life easier and easier and we are just one call or one message from our dearest ones.<sup>4</sup> It has also been proven as a huge innovative mass in the field of education. You can get easy accessibility to every sort of information with just

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one click on Google and innovations are coming day by day. As Today, Facebook is the world's largest social networking company with 2.89 billion active users which is a 14% increase over year.<sup>5</sup>

According to "Internet Service Providers Association of Pakistan" (ISPAK), internet was introduced in Pakistan in 1992-93 by Imran Net. with a dial up Email service. After seeing the good results, "Sustainable Development Networking Programme" was launched in 1993 in Islamabad. In 1996, PTA was instituted. From 2007 onwards, the Internet in Pakistan is fast and reliable. Due to this evolution and development of advanced mobile phones, social media has entered every niche and corner of Pakistan. It has made its place in almost every home.<sup>6</sup> The numbers show that most of population uses Face book, majority of which are below 25. Social media has become the need of hour. Every single person is now relied upon social media. Google maps has made journey easy. You can keep yourself in touch with what is happening around the world. The communication is too much fast now days that every minute is getting too much important.<sup>7</sup>

Advent of social media has arrived with a darker side. Since it has infested our students to a greater degree, more aftermaths are observed in them. The social media storm is swallowing them on the name of so-called Entertainment.<sup>8</sup> Firstly, they are shirking their work while neglecting studies. Secondly, their health is being harmed as social media is making their lifestyle sedentary, lack of proper sleep making them sluggish. Excessive screen exposure is posing great risk to eyesight and their attention, concentration and focus is being diminished. Their moral values are also being deteriorated.<sup>9</sup> They have no more family time and are being influenced by what is posted by other people on their timelines, not by elders. Increasing aggression and social media envy is making them bitter and immoral. Loneliness, depression and anxiety are increasing due to the side effect of social media. Now people get materialistic. A huge competition is seen among the people in posting stories to have fame and it created environment of chaos.<sup>10</sup>

In the field of social media, numerous studies have been undertaken. The study was also conducted in the realm of students. Medical students are also represented among the students. These studies, however, have been undertaken in the domain of student academic performance in various educational institutions. There has been no research on the impact of social media on medical student's social lives and depression related to it. In Faisalabad, there is no research in this field. The research will contribute to this field with the help of this investigation.

## MATERIAL & METHODS

Analytical cross-sectional design was used in this study. It was carried out on medical undergraduates of Faisalabad and their consent was taken beforehand. Study duration was 2 months (September 2021 to October 2021). Ethical approval was taken from ethical review committee with reference number IEC/147-21. The sample size was determined using multiple criteria while considering the study's aims, and it was found to be 440 with a 95% confidence level and a 5% margin of error.<sup>11</sup> Purposive sampling was done on a non-probability basis. The inclusion criteria were those students who use internet, gave consent and filled out the questionnaire and the exclusion criteria was those who didn't concede and those who don't use internet. A validated and structured questionnaire was used based on a framework from previous studies.<sup>12</sup> The questionnaire consisted of four sections: demographic data; impact analysis of social media; Chen internet addiction scale (CIAS) and patient health questionnaire – 9 (PHQ-9) to determine depression. The CIAS consists of 26 items evaluated on a 4-point Likert scale and is used to detect internet addiction (IA). It evaluates five types of Internet-related issues: obsessive/excessive use, cessation, endurance, social and health effects, and work operational challenges. The range of scores is from 26 to 104. Higher CIAS scores imply an intensity value of internet addiction. The CIAS cut-off points of 63/64 and 67/68 were found to be the most effective for detecting and evaluating IA among college students, indicating that 26-63 indicates appropriate use, 64-67 suggests at-risk use and

the need for screening, and 68-104 implies internet addiction. The items in the PHQ-9 questionnaire were used to test an individual's depression on a scale ranging from "not at all" to "almost every day." The study's depression levels were divided into four categories: "minimum = 1-4," "mild = 5-9," "moderate = 10-14," "moderately severe = 15-19," and "severe = 20-27." The information was coded and considered confidential. This data was analysed using SPSS version 25. Percentages and frequencies were calculated. In order to see the association between variables involved, the Chi square test of significance was used. A p-value of less than 0.05 was considered significant.

## RESULTS

Total number of participants were 440. Majority of them i.e. 280 (63.6%) were in the age group above 21 years. There were almost equal percentage of participants from each class i.e. 1<sup>st</sup> year (90, 20.5%), 2<sup>nd</sup> year (82, 18.6%), 3<sup>rd</sup> year (87, 19.8%), 4<sup>th</sup> year (98, 22.3%) and Final year (83, 18.9%). Most of the study participants were females i.e. 293 (66.6%). Majority of them were day scholars i.e. 304 (69.1%) and having urban residence i.e. 390 (88.6%).

In order to see the impact of social media on medical students, different questions were asked. Mostly students were spending 2-3 thousand Rs per month and 1-3 hours per day on internet usage, use social media late at night, main purpose is socializing, always use social media before going to sleep and having side effects also due to its usage like headache, blurring etc but when asked to choose between social media and sports, talk with family and social activities, mostly did not give preference to social media as shown in Table-I.

Using PHQ-9 cut-off criteria of 10 and above, moderate level of depression was found in 93 (21.1%) participants (37 have internet addiction), moderately severe in 90 (20.5%) participants (61 have internet addiction) and severe depression in 45 (10.2%) participants (30 have internet addiction) amounting to total (228) 51.8% depression among participants while internet addiction was present

in 163 (37%) of participants and 25 (5.7%) were at risk. Significant relationship was found between internet addiction and depression as shown in Table-II.

		Frequency (%)
Cost per month on internet usage	less than 1000 Rs	79 (18.0%)
	1000 - 2000	125 (28.4%)
	2 - 3000	141 (32.0%)
	> 3000 Rs	95 (21.6%)
Hours Spent on Social Media in a Day	1 - 3 hours	164 (37.3%)
	4 - 6 hours	129 (29.3%)
	> 6	139 (31.6%)
Use of Social Media Late Night	Yes	349 (79.3%)
	No	91 (20.7%)
Purpose of Use of Social Media	Chatting	48 (10.9%)
	Education	70 (15.9%)
	Net surfing	124 (28.2%)
	Socializing	198 (45.0%)
Skip/Delay Meal while using Social Media	Always	29 (6.6%)
	Never	234 (53.2%)
	Sometimes	177 (40.2%)
Use of Social Media Immediate after Wake up in the Morning	Always	158 (35.9%)
	Never	49 (11.1%)
	Sometimes	233 (53.0%)
Use of Social Media before Sleeping	Always	311 (70.7%)
	Never	7 (1.6%)
	Sometimes	122 (27.7%)
What will you choose between Social Media and Sports	Social media	217 (49.3%)
	Sports	223 (50.7%)
Choice between uses of Social Media or Talk with Family	Talk with Family	340 (77.3%)
	Uses of Social Media	100 (22.7%)
Choice between uses of Social Media and Social Activities	Social Activities	276 (62.7%)
	Uses of Social Media	164 (37.3%)
Keep Mobile Date (Internet) on	24 Hours	143 (32.5%)
	Only When use Social media	221 (50.2%)
	Throughout the day but not in night	76 (17.3%)
Have any of the following due to internet usage? headaches, blurred vision, double vision, hurting eyes, hearing problems	Yes	278 (63.2%)
	No	162 (36.8%)

**Table-I. Impact analysis of social media**

	Internet Addiction			P-Value
	Normal Use	At Risk	Internet Addiction	
PHQ-9 categories to assess depression	Minimal(1)	69	2	0.00
	Mild(2)	92	5	
	Moderate(3)	59	6	
	Moderately severe(4)	23	6	
	Severe(5)	9	6	

Table-II. PHQ-9 and CIAS among participants

Significant relationships were found between gender and internet addiction; between internet addiction, depression and different variables like gender, cost per month on internet usage, hours spent on social media in a day, use of social media late night, purpose of use of social media, skip/delay meal while using social media, use of social media immediate after wake up in the morning, use of social media before sleeping, choice between social media or sports-talk with family-social activities, keep mobile date (internet) on and having side effects due to internet usage as shown in Table-III.

## DISCUSSION

The prevalence of internet addiction among medical students was determined to be 37 percent in this study, which is greater than in prior medical student studies done by Ali Sabri Radeef et al where it was around 22.8%.<sup>12</sup> Also, a research conducted by BengüYücens et al depicted that internet addiction among undergraduate medical students was present in 27% of participants which is also lower than our study.<sup>13</sup> A research done by Siew Mooi Ching et al evaluated that internet addiction in medical students was found to be 36.9% which is similar to our study.<sup>14</sup>

Internet usage is not free and there will be some charges paid by everyone including students to use it. In our sample, most of the students' average cost per month on internet usage was 2 – 3000 Rs followed by 1 – 2000 Rs (50.4%). These results were similar to the research done by Namrata Upadhyay et al where more than 50% of students termed their internet usage expenditure as intermediate level.<sup>15</sup> Internet usage over the past few years have increased significantly by more than double the amount. In our study, most of the students were using internet for 1 -3 hours

followed by > 6 hours per day which is in contrast to a study conducted by Neha Sharma et al where mostly students were using internet for 3 -6 hours per day.<sup>16</sup>

By using social media late at night will affect students' sleep and also their attendance in morning lectures. A study conducted by Mohamed H. Taha depicted that 71.8% of medical students lost sleep due to internet usage till late night resulting in absence in morning lectures.<sup>17</sup> The results of our study were slightly higher where 79.3% of medical students affected by social media usage at late night. But internet addiction was lower in that study (12.4%) as compared to ours. (37%). The purpose of using social media varies from net surfing to socializing to using it for educational purposes. In our study, mostly students use internet for socializing and net surfing i.e. 45% and 28.2% respectively instead of educational purpose which accounts for 15.9% only. These results were similar to a study conducted by Erkan Bal et al which showed major purpose of using internet was socializing.<sup>18</sup>

In our study, depression was found in more than 50% of students. This is more than double of a study conducted by Lisa Barman et al which showed that nearly 24% of medical students reported depression.<sup>19</sup> Another research done by Batool Gholamian et al depicted the positive relationship between internet addiction score and depression.<sup>20</sup> A meta-analysis done by Melvyn W. B. Zhang et al showed that around 30.1% of medical students were having internet addiction and its almost 5 times more common in medical students in comparison to general population.<sup>21</sup> A study done by Mehdi Sayyah showed that internet addiction in medical students was as high as 98.4% which is much more than in our

		Patient Health Questionnaire - 9					Internet Addiction (I.A.)				
		1	2	3	4	5	P-Value	No I.A.	At risk	I.A.	P-Value
Gender	Male	29	45	38	20	15	0.096	89	16	42	0.00
	Female	49	89	55	70	30		163	9	121	
Cost per month on internet usage (Rs)	< 1000	17	31	15	12	4	0.001	53	9	17	0.016
	1000 - 2000	18	42	22	32	11		70	5	50	
	2 - 3000	22	36	44	28	11		82	5	54	
	> 3000	21	25	12	18	19		47	6	42	
Hours Spent on Social Media in a Day	less than 1	2	1	5	0	0	0.00	7	0	1	0.00
	1 - 3 hours	46	53	35	23	7		127	8	29	
	4 - 6 hours	18	41	29	31	10		73	9	47	
	> 6	12	39	24	36	28		45	8	86	
Use of Social Media Late Night	Yes	48	103	73	83	42	0.00	172	24	153	0.00
	No	30	31	20	7	3		80	1	10	
Purpose of Use of Social Media	Chatting	5	15	13	12	3	0.001	27	5	16	0.000
	Education	26	22	10	8	4		56	4	10	
	Net suffering	13	40	31	29	11		71	5	48	
	Socializing	34	57	39	41	27		98	11	89	
Skip/Delay Meal while using Social Media	Always	2	10	4	8	5	0.00	14	0	15	0.00
	Never	56	75	57	36	10		170	10	54	
	Sometimes	20	49	32	46	30		68	15	94	
Use of Social Media Immediate after Wake up in the Morning	Always	22	45	31	36	24	0.01	66	8	84	0.00
	Never	7	23	13	6	0		34	1	14	
	Sometimes	49	66	49	48	21		152	16	65	
Use of Social Media before Sleeping	Always	56	78	65	69	43	0.00	157	20	134	0.00
	Never	0	3	3	0	1		6	0	1	
	Sometimes	22	53	25	21	1		89	5	28	
Choice between Social Media or Sports	Social media	25	61	47	62	22	0.00	103	13	101	0.00
	Sports	53	73	46	28	23		149	12	62	
Choice between Social Media or Talk with Family	Talk with Family	74	108	71	52	35	0.00	215	16	109	0.00
	Uses of Social Media	4	26	22	38	10		37	9	54	
Choice between Social Media or Social Activities	Social Activities	60	86	61	46	23	0.005	178	13	85	0.00
	Uses of Social Media	18	48	32	44	22		74	12	78	
Keep Mobile Date (Internet) on	24 Hours	9	36	36	43	19	0.00	62	16	65	0.00
	Only When use Social media	53	76	48	22	22		143	5	73	
	Throughout the day but not in night	16	22	9	25	4		47	4	25	
Have any of the following due to internet usage? headaches, blurred vision, double vision, hurting eyes, hearing problems	Yes	24	84	66	65	39	0.00	131	16	131	0.00
	No	54	50	27	25	6		121	9	32	

Table-III. Significant relationships with PHQ-9 and CIAS



sample population.<sup>22</sup>

The significant number of medical students who were included in this study was one of its most obvious strengths, which may be attributable in part to our use of basic questionnaires that could be completed quickly. As a result, the study's findings may be representative. Furthermore, to our information, this is one of the initial research to look into the link between internet addiction and depression in Faisalabad medical students. Our results may raise severe concerns about the severity of these widespread issues, leading to the implementation of suitable monitoring and measures for this population group. A causal association between internet addiction, depression, and the factors that influence them could not be formed because this was a cross-sectional study. We believe that a prospective investigation is still needed.

## CONCLUSION

Concerns should have been raised about the rising percentage of internet addiction and depression among medical graduates. The evaluation of characteristics that are strongly linked to internet addiction can aid in the development of thorough activities directed at spreading awareness regarding the dangers and determinants of internet addiction in high-risk populations. Given the high frequency of internet addiction among students in this study and its link to depression, it indicates that interventional strategies and education regarding proper Internet usage should be planned.






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2	Talha Mahboob	Study design and concept, questionnaire design.	
3	Faiza Mehboob	Introduction, study design and data collection.	
4	Khizra Saeed	Data collection and analysis.	
5	Muhammad Abdullah Ali	Data collection, drafting.	
6	Muhammad Ahmad Faraz	Introduction and data collection.	