Innovative Journal of Medical and Health Science

https://innovativejournal.in/index.php/ijmhs/index

Received 28 March 2024 || Revised 10 April 2024 | Accepted 12 May 2024 | Published Online 24 May 2024
ISSN (P) 2589-9341 || (O) 2277-4939 IF:1.6.6

RESEARCH ARTICLE

Utilization Pattern of Internet use among Undergraduate Students of Medical College in New Delhi

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DOI: https://doi.org/10.52845/IJMHS/2024/14-05-1

Abstract: Introduction: Internet is important to college students, especially for professional studies students like medical or engineering who massively uses Internet for academic or research purposes. However, they can't control or reduce the duration of Internet usein-spite of the negative consequences like health issues, sedentary behaviour. This present study aims to determine the prevalence of Problematic Internet use (PIU), factors associated with PIU among medical students and its health implications.

Methods: A descriptive cross-sectional study was performed among 179 medical students. Predesigned, semi-structured questionnaire was used for data collection focussing on Internet use pattern, reasons of Internet use, health issues related to excessive Internet use, and prevalence of PIU was assessed by Dr. Kimberly Young's internet addiction test (IAT) scale.

Result: According to Dr. Kimberly Young's internet addiction test (IAT) scale, majority of the students have mild Internet addiction (42%)and as IAS (Internet addiction score) ≥50 is considered as PIU (Problematic Internet use) which is 48/179 (26.81%) in present study.PIU was associated with Internet browsing, health issues, online games and education status of both parents. It was observed that most of the students were using Internet for socializing (90.5%) and Internet browsing (89.9%) followed by academic/education purpose (81.1%), payment of bills (79.9%). The preferred mode of socializing was whats app (57%) followed by whats app + telegram (12%). News feed, Google browsing, watching OTT content, online games were found to be positively associated with PIU (odds ratio >1).

Conclusion: Internet addiction is a relatively frequent phenomenon among medical students. The predictors of internet addiction were Internet browsing, health issues, online games and education status of both parents.

INTRODUCTION

In the recent time, there are various options available of media use. It has been seen that, screen viewing time has increased in past few years. The current generation of young children, adolescents and young adults are growing up immersed in a world saturated with electronic media, and they did not know the time before the Internet and for this reason, they are called "digital natives"[1]

As of October 2023, there were 5.3 billion internet users worldwide, which amounted to 65.7 percent of the global population. Out of this, Asia was home to the largest number of online users worldwide – over 2.93 billion.[2] In India, 700 million Internet users, as per the data consumption in 2022.[3] According to NFHS 5 (2019-2021), 51.8% of women and 72.5% of men have ever used Internet.[4] According to the recent research, it was found that Internet use is beneficial for Education and research purpose, communication, online transactions/ bill payments, trade and entertainment.[5] on the other hand there is "Internet addictions and Problematic Internet use". Internet addiction is characterized by excessive or poorly controlled preoccupations, urges or behaviours regarding computer use and internet access that lead to impairment or distress.[6]

Recent years due to wide Internet access and ownership of digital gadgets, Internet use has been increased among college students. For education purpose, online gaming, online chatting or other social media use, online shopping, OTT watching and online transactions are few options which are very common among college students. Because of increased Internet use and excessive screen time among college students it was found that Anxiety, stress, depression, loneliness are common findings.[7] Screen time is associated with visual difficulties and also sleep disturbances.[8 9] Lack of physical activities or sedentary behaviour is the most common outcome of excessive Internet use. "Sedentary behaviour is defined as any waking behaviour such as sitting or leaning with an energy expenditure of 1.5 metabolic equivalent task (MET) or less".[10] MET is defined as the ratio of work metabolic rate to the standard resting metabolic rate (RMR). According to WHO data, insufficient physical activity is the 4th leading risk factor for mortality. Approximately 31% of the global population aged ≥15 years engages in insufficient physical activity, and it is known to contribute to the death of approximately 3.2 million people every year.[11.]In few recent studies it was found that, sedentary behaviour is associated with obesity among children and cardiovascular diseases among adults.[9 12]

Hence, the present study unfolds that Internet addiction among the medical students is a dark reality that requires timely remedial action.

AIM OF THE STUDY

1. To assess the prevalence of PIU (Problematic Internet use) and its pattern.
2. To assess the health impacts among medical undergraduate students of tertiary care hospital of Delhi.

MATERI1AL AND METHODS

The descriptive cross-sectional study was conducted among 179 medical undergraduate students of medical college of Delhi, India, from 1st, March 2024 to 31st, April 2024. **Inclusion criteria:** Undergraduate medical students using Internet for at least 6 months, Undergraduate students who was present at the time of data collection. **Exclusion criteria**: Students who have not given consent for the study.
Sample size: $n = Z^2 * p * (1-p)/d^2$ where
p = Proportion or prevalence of interest of population based previous studies
q = 100-p
d = clinically expected variation/error (Absolute allowable error)
p is 10.8%, taken as Global prevalence of Internet addiction among medical students[13]
Sample size = 1.96^2 x 0.10 (1-0.10)/ 0.05^2=163
The sample size will be adjusted to compensate for non-response rate of 10%. Hence, a sample size of 163 (163 + 10% x 163= 179)

Four MBBS batches were be considered for study. Each batch consists of 60 students. Complete universe of students was taken with informed written consent. The purpose of the study was explained prior to the data collection. Interview was carried out in a confidential, non-obligatory and non-judgmental manner. Anonymity of the study participants was ensured and utmost confidentiality of the information collected was maintained.

Data collection: We had stratified undergraduate students according to the year of admission and enrolled at least 55 students from each stratum. We had fixed the criteria that at least 80-90% of students should be present in each class. Students should be chosen randomly using computer-generated random numbers by giving a serial number to the each present students. Single attempts were made to collect data from each admission year student.

Predesigned, semi-structured questionnaire was used for data collection and information like age, gender, place of residence, relationship status, education and occupation status of parents, family total income were asked and few behavioural questions were also asked like smoking habit, alcohol drinking habit, physical activity, sleep pattern. And questions related to internet use; ownership of gadget (computer, laptop, mobile, tablet), age when first time used Internet, for how long have you used the internet? On average, duration of Internet use in years, in a week and in a day (hours) were asked? On average, how much money per month do you spend on the internet. Reasons for Internet use and health issues due to excessive internet used have been asked.

We have used Dr. Kimberly Young's internet addiction test (IAT) scale[14] to assess PIU (Problematic Internet use). The IAT is a 20-itemthat measures the severity of self-reported compulsive use of the internet. Each item is rated on a 6-pointLikert scale ranging from 0 to 5; 0 = Not Applicable, 1 =Rarely, 2 = Occasionally, 3 = Frequently, 4 = Often, 5 =Always. The marking for this questionnaire ranges from0 to 100; the higher the score range, the greater the level of addiction. Subjects with scores < 50 were categorized as "average internet users," and those with scores ≥50were categorized as "problematic internet users"

Statistical Methods: The data has pooled and processed with the help of computer. The data was exported into Microsoft Office Excel spread sheet and analysis was done using SPSS version 21. The data was expressed as proportions and percentages and to see any association among the expected qualitative variables, crude odds ratio and Chi square was applied.

Ethical issues: The present study got the Ethical clearance certificate from Institutional Ethics Committee (No. IEC/NDMC.2024/257) on 15/02/2024.

RESULT

Table 1 depicts the socio-demographic profile of medical students, majority of the students were males (57%) with the age group of more than 20 years (82.1%), belongs to nuclear family (76%) and are from Delhi (63.7%). The socio-economic class of majority medical students belongs to upper class (Class I, 82.7%) according to the modified BG Prasad scale[15], education status of both parents in most of the students were PG & Graduate and occupation status of father were professional. Table 3 depicts, the Occupation of Father, Education of Father and Education of mother were found to be statistically associated (p value < 0.05) with PIU. Regarding behaviour pattern of students, it was observed that majority of the students were non- smokers (93.3%), were physically active (58.7%) and for < 30 min/day (61.5%), they sleep for < 8 hours/day (70.9%). The state of being physically inactive, duration of physical activity and sleep duration of students was found positively associated (odds ratio > 1) with PIU. (Table 2)

About Internet using pattern, majority of the students have first time used Internet at their 11-15 years of age (47.5%), mostly were using Internet for past 6-10 years (45.8%), for all 7 days in week (83.2%) and for < 5 hours/day (53.6%). Most of the students spend more than 500 INR/ month for Internet subscription. Past years for Internet use and duration of Internet use in a day was found to be statistically associated (p value < 0.05) with PIU. About ownership of electronic gadgets, most of the students owns smart phones (99%) and tablet (66%), majority of them owns both smart phones and tablet (65.3%) followed by smart phones and laptops (36.3%). Figure 2 depicts reasons of Internet use among medical students, it was observed that most of the students were using Internet for socializing (90.5%) and Internet browsing (89.9%) followed by academic/education purpose (81.1%), payment of bills (79.9%). The preferred mode of socializing was whats app (57%) followed by whats app + telegram (12%). News feed, Google browsing, watching OTT content, online games were found to be positively associated with PIU (odds ratio >1). Figure 1 depicts presence of health issues due to excessive Internet use, it was found that visual complaints, sleep issues and headache were major complaints. The presence of health issues due to excessive Internet use was also positively associated with PIU. (odds ratio >1)

Table 1: Socio-demographic profile of medical students

Variable	**Number (n=179)**	**Percentage (%)**
Age		
< 20 years	32	17.9%
≥ 20 years	147	82.1%
Gender		
Male	102	57%
Female	77	43%
Type of Family		
Nuclear	136	76%
Joint	43	43%
Permanent address		
Non-Delhi	65	36.3%
Delhi	114	63.7%
Hostel accommodation		
Non-hosteller	100	55.9%
hosteller	79	44.4%
Relationship status		
Not in a relationship	149	83.2%
In a relationship	30	16.8%
Socio-economic status		
Class IV	06	3.4%
Class III	01	0.6%
Class II	24	13.4%
Class I	148	82.7%
Occupation status of Parents	*Occupation of Father*	*Occupation of Mother*
Professional	148 (82.7%)	39 (21.8%)
Semi-professional	09 (5.0%)	03 (1.7%)
Clerk,shop-owner,farm-owner	11 (6.1%)	03 (1.7%)
Skilled	08 (4.5%)	0
unskilled	01 (0.6%)	0
unemployed	02 (1.1%)	134 (74.9%)
Education status of Parents	*Education of Father*	*Education of Mother*
Graduate and PG	139 (77.7%)	121 (67.6%)
Intermediate	20 (11.2%)	23 (12.8%)
High school	11 (6.1%)	23 (12.8%)
Middle	02 (1.1%)	03 (1.7%)
Primary	01 (0.6%)	05 (2.8%)
Illiterate	06 (3.4%)	04 (2.2%)

Table 2: Factors associated with Internet addiction among medical students

Study Variable	Average Internet use (n=131)	Problematic Internet use (n=48)	Odds ratio (95% CI)
Age			
< 20 years	26	06	1.733 (0.666-4.514)
≥20 years	105	42	
Gender			
Male	70	32	0.574 (0.287-1.467)
Female	61	16	
Type of Family			
Nuclear	104	32	1.926 (0.924-4.014)
Joint	27	16	
Permanent residence			
Non-Delhi	48	17	1.055 (0.529-2.103)
Delhi	83	31	
Hostel accommodation			
Non-hosteller	72	28	0.872 (0.446-1.072)
hosteller	59	20	
Relationship status			
Not in a relationship	110	39	1.209 (0.510-2.863)
In a relationship	21	09	
Smoking			
Smoker	05	07	0.232 (0.70-0.772)
Non-smoker	126	41	
Physical Activity			
Physically inactive	58	16	1.589 (0.795-3.175)
Physically Active	73	32	
Duration of physical activity			
<30 min	87	23	2.149 (1.097-4.210)
≥ 30 min	44	25	
Sleep duration			
< 8 hours	99	28	2.210 (1.099-4.444)
≥ 8 hours	32	20	
Google browsing			
No	17	01	7.009 (0.907-54.183)
Yes	114	47	
News feed			
No	55	15	1.592 (0.789-3.213)
Yes	76	33	
Watching OTT Content			
No	36	07	2.220 (0.913-5.397)
Yes	95	41	
Watching Adult content			
No	109	23	5.385 (2.599-11.157)
Yes	22	25	
Online shopping			
No	31	12	0.930 (0.432-2.004)
Yes	100	36	
For academic assignment			
No	21	12	0.573 (0.257-1.278)
Yes	110	36	
Socializing			
No	11	06	0.642 (0.223-1.843)
Yes	120	42	
Online games			
No	84	18	2.979 (1.502-5.908)
Yes	47	30	
Online yoga/exercises			
No	113	39	1.449 (0.601-3.489)
Yes	18	09	
Payment of bills			
No	25	11	0.793 (0.356-1.769)
Yes	106	37	
Health issues			
No	45	10	1.988 (0.907-4.357)
Yes	86	38	

Table 3: Other factors influencing Internet addiction among medical students

Variable	Average Internet use (n=131)	Problematic Internet use (n=48)	Chi-square value (p value)
Socio-economic status			
Class IV	05	01	0.752 (0.861)
Class III	01	01	
Class II	17	06	
Class I	108	40	
Occupation status of Father			
Professional	114	34	11.625 (0.040)*
Semi-professional	07	02	
Clerk,shop-owner,farm-owner	05	06	
Skilled	03	04	
unskilled	01	01	
unemployed	01	01	
Education status of Father			
Graduate and PG	103	36	12.326 (0.031)*
Intermediate	13	06	
High school	11	01	
Middle	01	01	
Primary	01	01	
Illiterate	02	03	
Occupation status of mother			
Professional	29	10	5.025 (0.170)
Semi-professional	01	02	
Clerk,shop-owner,farm-owner	01	02	
Unemployed	100	24	
Education status of mother			
Graduate and PG	90	31	18.752 (.002)*
Intermediate	15	08	
High school	22	01	
Middle	02	01	
Primary	01	04	
Illiterate	01	03	
Age of first Internet use (years)			
5-10 years old	18	10	1.694 (0.429)
11-15 years old	62	23	
16-20 years old	51	15	
Duration of Internet use (years)			
1-5 years	44	06	7.776 (0.020)*
6-10 years	55	27	
>10 years	32	15	
Duration of Internet use (weeks)			
2-6 days	26	4	3.338 (0.068)
7 days	105	44	
Duration of Internet use (day)			
< 5 hours	76	20	8.895 (0.012)*
6-10 hours	48	19	
>10 hours	07	09	
Money spent on Internet use per month			
INR 1-150	11	1	2.928 (0.408)
INR 151-300	59	20	
INR 301-500	29	12	
INR >500	52	15	

***significant association**

Table 4: Internet addiction score

Grades of Internet addiction	Number	Percentage
Severe dependence (80-100 score)	01	0.6%
Moderate dependence (50-79 score)	47	26.3%
Mild dependence (31-49 score)	75	41.9%
Normal (0-30 score)	56	31.3%

IAS (Internet addiction score) ≥50 is considered as PIU (Problematic Internet use) which is 48/179 (26.81%) in present study.

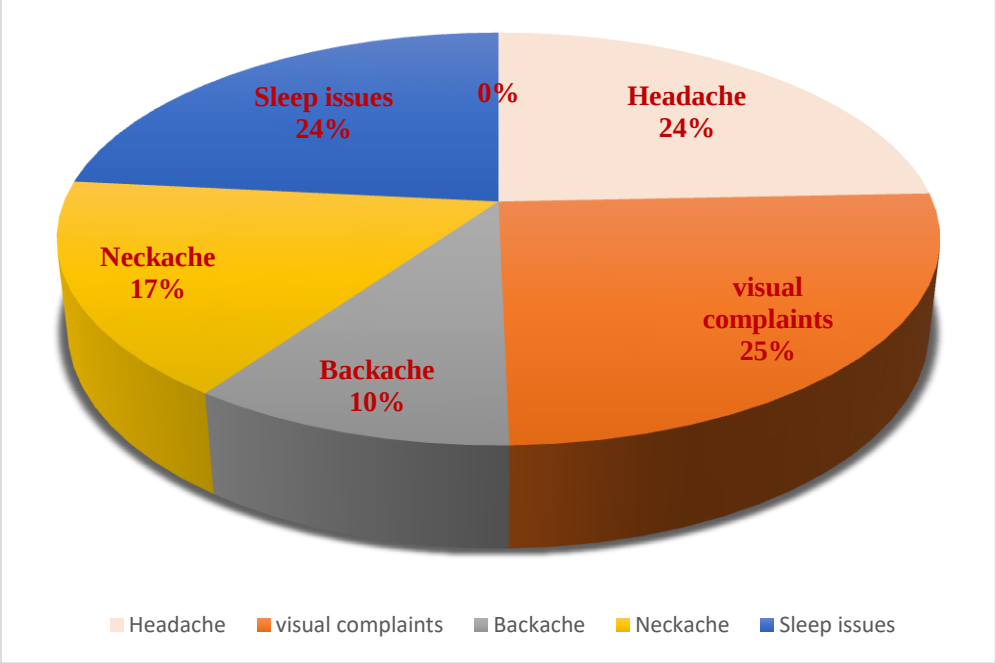

Figure 1: Health issues followed by excessive Internet use among medical students

***Multiple response possible**

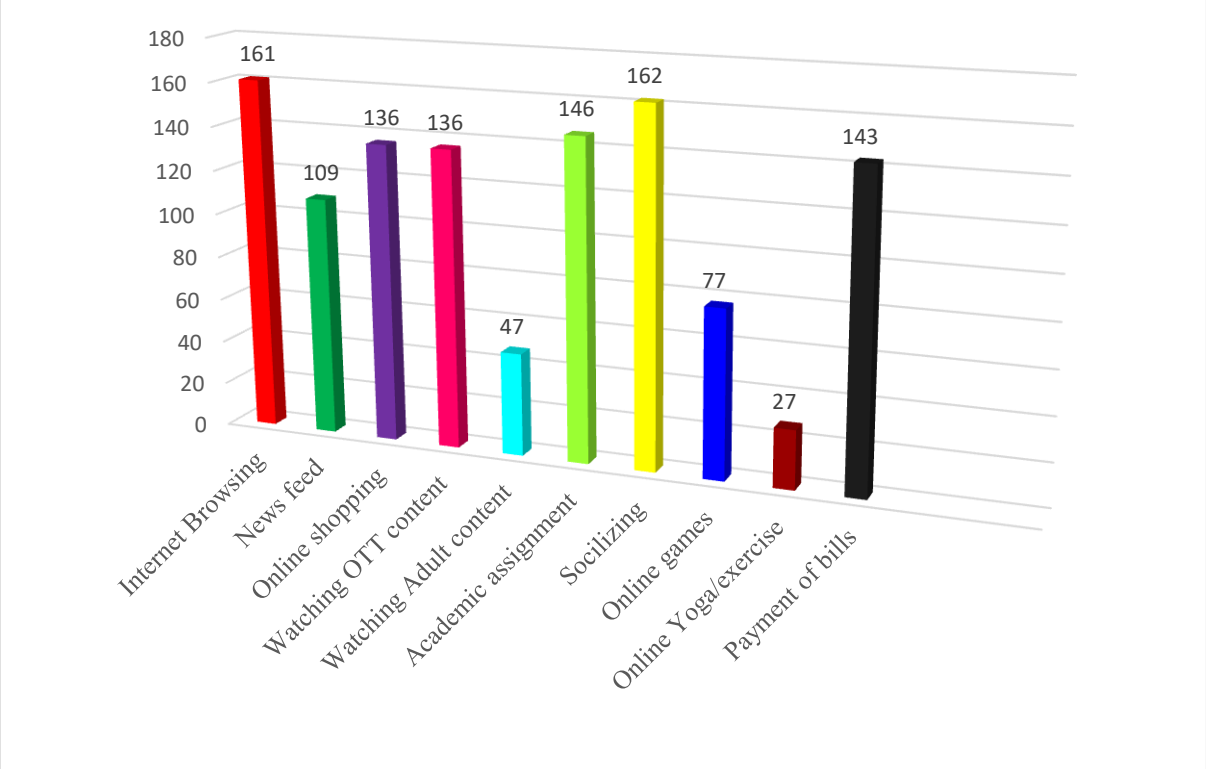

Figure 2: Distribution of medical students according to reasons of Internet use

***Multiple response possible**

DISCUSSION

Similar results were found in a study conducted by Sharmitha Krishnamurthy and Satish Kumar Chetlapalli (2015)[16] at silicon valley, Bengaluru among college students and there was mild-moderate Internet addiction.Siva Kumar ChennamSetty et al[17] conducted study among medical undergraduate students (2015) at medical college of Hyderabad also found 70% students have mild Internet addiction.Similarlyin a study conducted among medical undergraduate students on Mangalore (2013)[18] 57.7% of medical students has mild Internet addiction with majority of students using Internet for social networking, education purpose and entertainment. Similar results were found in a study conducted by Bhushan Chaudhari et al[19](2015) at Pune, Maharashtra, PIU was associated with lesser age of first Internet use, socializing, watching videos and sexual content.

Similarly were also seen in other countries also, In a study conducted by Jonathan Sserunkuuma et al (2023)[20] at Bangladesh, the prevalence of Internet addiction was less (8%). And in a study conducted by A. Baroni (2023)[21] among college students who has attended class by department of Child and Adolescent Psychiatry, USA, it was found that 27% of students were categorized by problematic Internet users with majority of them uses Internet for education, entertainment and socializing. The sleep pattern was also negatively affected by Internet use (77%). Similar results were found in a study conducted by Kristina Adorjan et al (2020)[22] in Munich, Germany among university students and it was found that prevalence of AIU (addictive Internet use) was 24.8% with majority of students using Internet for browsing, social networking statistically significant association was seen with browsing and AIU.

In contrast to the present study, in a study conducted by Reda A. Ibrahem (2022)[7] among medical college students of Egypt has 69.3% of PIU and significantly associated with increased family income, depression, anxiety and stress . Also in a study conducted by Boubacar Traore et al (2023) among medical students of Casablanca, Morocco,, the prevalence of Internet addiction was 44.5% and also associated with mental health and sleep disorder.[23]

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