Cyberbullying Victimisation and Psychological Well-being: A Cross-sectional Study among Medical Students in Western India

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ABSTRACT

Introduction: Cyberbullying is the voluntary and repetitious abuse that is inflicted through computers/mobile phones/other electronic devices, using language that can defame, threaten, harass, bully, exclude, discriminate, demean, humiliate, stalk, disclose personal information, or contain offensive, vulgar comments. Within the last decade, cyber bullying has received a high level of attention from researchers worldwide. The reason is the continuous advancements of technological tools and their link with mental health issues.

Aim: This study aimed to assess the prevalence of cyberbullying victimisation and its effect on the psychological well-being of medical students.

Materials and Methods: A cross-sectional study was conducted on 502 medical students studying at Medical College Baroda, Gujarat in western India from January 2022 to June 2022. Medical students were assessed for cyberbullying victimisation using Cyber-Victimisation Scale (CYBVICS). The impact of cyberbullying on psychological well-being was assessed using the Patient Health Questionnaire (PHQ-9) and Generalised Anxiety Disorder (GAD-7) for screening of

depression and anxiety, respectively. Data were analysed with epi info. Qualitative variables like socio-demographics and clinical parameters were summarised in frequency and percentages. The Chi-square test was applied to evaluate the association between categorical variables. The p-values less than 0.05 were considered significant.

Results: Among 502 medical students, 71 (14.14%) were victims of mild cyberbullying, whereas 90 (17.93%) and 103 (20.52%) had experienced moderate and severe cyberbullying victimisation, respectively. Among all participants, 20 (4%) (Chi-square=39.329, p=<0.0001) and 16 (3.19%) (Chi-square=21.686, p=<0.0001) screened positive for depression and anxiety, respectively.

Conclusion: The cyberbullying victimisation was much more prevalent among medical students and is having a strong negative impact on the psychological well-being of students, causing significant depressive and anxiety symptoms. The severity of impact was increasing with the increasing severity of cyberbullying victimisation. Such studies will help healthcare professionals and institutional interventions to protect those likely to fall victim of cyberbullying.

Keywords: Anxiety, Bullying, Depression, Mental health, Psychological impact

INTRODUCTION

In recent times, with the invention of the internet and electronic devices like smartphones, laptops, etc., social connectivity among young people, has increased tremendously. The use of the internet and mobile phones has become an integral part of daily life. It has provided them with easier and instant contact. With easier means of socialising, new ways of harassment have also emerged, having a significant impact on psychological well-being [1].

Bullying is divided into four types: emotional, verbal, physical, and cyber [2]. As per a 2016 estimate by the United Nations Children's Fund (UNICEF), globally, one in three internet users is a child whereas, in India, the recent 'India Internet Report 2019' suggests that two in three internet users are between 12 and 29 years of age. The young age of this group of internet users often falls prey to online bullies due to their psychological makeup. This has resulted in a spike in cyberbullying and harassment cases. As a matter of fact, in one year alone (2017-2018), cyberbullying of Indian women and teenagers rose by 36% [3]. Cyberbullying or electronic aggression; term appear to have been coined in 2000 in Canada [4]. Cyberbullying, also known as cyber harassment or cyber victimisation has emerged as an extension of traditional bullying and is defined by Hinduja and Patchin as the voluntary and repetitious abuse, inflicted by electronic media such as computers, cell phones, etc. It uses language that can defame, threaten, harass, bully, excludes, discriminate, demean, humiliate, stalk, discloses personal information, or contain offensive, vulgar, or derogatory comments [5]. According to Palmeri, it is a unique component and

modern method used to exert power and dominance over another person, by sending an unlimited number of harassing messages through Facebook, Twitter, and e-mail [6]. The American National Crime Prevention Council defines it as "the process of using the Internet, cell phones, or other devices to send or post text or images intended to hurt or embarrass another person"[7]. Cyberbullying is an unfortunate social product of social networking sites like Facebook, Instagram, Snapchat, Twitter, and so on. Social media has created a sense among individuals that social media profile reflects their public identity or public image, including their views, activities, and behaviour; which creates a sense of online or social reputation, which is harmed by cyberbullying [5].

The most serious concerns about cyberbullying are include

That it is persistent as it can happen at any time and any place and victims cannot escape it. It is permanent as most information communicated online is permanent and public if it is not reported and removed; known as a digital footprint or digital shadow. It is hard to notice because parents or teachers may not overhear or see cyberbullying taking place, and thus it may go unnoticed or unrecognised [8]. Willard NE (2006), in her book "Cyberbullying and Cyberthreats," outlines various forms of cyberbullying [9].

Flaming refers to an argument between people involving vulgar language, threats, and insults [10]. Cyber harassment involves repetitive offensive messages sent to a target [11]. Denigration is the spreading of information about another that is derogatory and untrue, including spreading gossip or posting false information or rumors on web pages that are circulated through private

communication channels, including digital alteration of photos, most commonly in a way that portrays someone in a sexualised manner [9,11]. In impersonation, the perpetrator poses as the victim and either sends or posts negative, cruel, or inappropriate information [9]. Perpetrators may also pose as someone else entirely in an attempt to elicit information. Trickery refers to talking someone into revealing secrets or embarrassing information and then sharing it online [11]. It may lead to the outing, which refers to the sharing of personal secrets or sensitive information without the victim's permission. Exclusion, or cyber-ostracism, refers to intentionally and cruelly excluding someone from an online group [9]; unfriending or blocking someone on Facebook, WhatsApp, and similar social networking sites [12].

According to the World Health Organisation (WHO), mental health is- "a state of well-being in which the individual realises his or her abilities to cope with the normal stresses of life, can work productively and fruitfully, and can make a contribution to his or her community". It refers to the overall well-being of an individual, including emotional well-being, social well-being, and psychological well-being [13]. Psychological well-being consists of six dimensions; self-acceptance (positive appraisal of oneself and one's past life), positive relations (quality, interpersonal relationships), autonomy (sense of self-determination), environmental mastery (ability to effectively manage one's life and the world around), personal growth (a sense of development as a person), and a sense of purpose in life (a belief that one's life is useful and has a sense of purpose) [14].

Research has demonstrated many detrimental consequences of cyberbullying victimisation, such as low self-esteem, frustration, anger, depression, poor academic performance, substance abuse, loneliness, low self-esteem, and increased suicidal tendencies. One of the most damaging effects is that the victim begins to avoid friends and social activities and excludes himself from society [15-22].

Cyberbullying is common among all age groups, including university students [23-28]. Tertiary education students predominantly use Facebook and Instagram, regarded as the worst offending platforms for cyberbullying [29]. University students who experienced cyberbullying had poor mental health, problems with personal relationships, poor academic performance, and poor physical health [30-34].

Bullying among children is commonly studied, but studies assessing cyberbullying, especially among college students, are very less. Such studies are needed and will help students to get timely help.

This study aimed to assess the prevalence of cyberbullying victimisation, and the impact of cyberbullying on the psychological well-being of medical students.

Primary objective: To assess the prevalence and severity of cyberbullying victimisation among medical students.

Secondary objectives:

- To assess the impact of cyberbullying victimisation on the psychological well-being of medical students.
- To associate cyberbullying victimisation with the socio-demographic profile of participants.

MATERIALS AND METHODS

A cross-sectional study was conducted on 502 medical students at a Medical College Baroda, Gujarat in western India between January 2022 to June 2022. The sample was taken using non probability convenient sampling, where approximately 1000 medical students studying at medical college Baroda were approached, out of which 502 students fulfilled inclusion criteria and gave consent to participate, were included in the study. Medical students aged 18 years and above, not having any behavioural disturbances or suffering from psychotic disorder and giving written informed consent; were included in the study; whereas those having any psychiatric illness according to DSM-5 [35], aged below 18 years were excluded from

the study. All participants were interviewed individually, maintaining their privacy. Informed written consent was taken.

This study was approved by Institutional Ethics Committee with reference number IECBHR/149-2021 obtained on 28/12/2021 and participants were recruited for the study after approval.

Study Procedure

A semi-structured questionnaire was used to interview the participant about socio-demographic details, education details, past and family history of medical and psychiatric illness etc., and about social media use, hours of mobile use (hours of mobile use were categorised in to three groups after validation based on pilot study conducted on 100 participants supervised and checked by a statistician and a psychiatrist).

Cyberbullying victimisation was assessed using CYBVICS by Buelga S et al., 2010, 2012 [36]. It consists of 18 self-reported items rated as:

1. Never
2. Once or twice
3. Few times (between 3 and 5)
4. Several times (between 6 and 10)
5. Many times (more than 10)

This scale measures one's experience as a victim of cyberbullying. It is grouped into two cyber-victimisation modalities, direct and indirect. Direct cyber-victimisation includes experiences of being victimised that involve direct attacks (e.g., "Someone insulted me or ridiculed me on social networks") and social-type behaviours (e.g., "Someone removed or blocked me from groups so that I wouldn't have any friends"). Indirect cyber-victimisation includes experiences of being victimised that involve the manipulation of images (e.g., "Someone created or manipulated videos or photos of me"), identity theft (e.g., "Someone created a false profile with my personal data on the Internet"), or hacking (e.g., "Someone changed my password to social networks so I could not access them").

The total scores were grouped into four categories taking the 25, 50, 75 percentiles as the cut-off point [36]. Those having scores below the 25th percentile were grouped as normal, a score between the 25th-50th percentile as mild cyberbullying victimisation, a score between 50th-75th percentile as moderate cyberbullying victimisation, a score above 75th percentile as severe cyberbullying victimisation.

The impact of cyberbullying on psychological well-being was assessed using:

PHQ-9: For screening of depression, the PHQ-9 was used [37]. PHQ-9 is a validated screening tool that scores the severity of depressive symptoms, ranging from 0 to 27. Scores of 0, 1, 2, and 3, to the response categories of not at all, several days, more than half the days, and nearly every day, respectively. Scores of 10 or more were considered screened positive for depression.

GAD-7: The questionnaire was used to screen for anxiety among participants [38]. GAD-7 is a validated screening tool that scores the severity of anxiety symptoms ranging from 0 to 21. Scores of 0, 1, 2, and 3, to the response categories of not at all, several days, more than half the days, and nearly every day, respectively. A score of 10 or more will be considered screened positive for anxiety.

STATISTICAL ANALYSIS

Data were entered in an excel sheet and analysed with epi info CDC version 7. Qualitative variables like socio-demographics (age, gender, year of MBBS, family type) and clinical parameters like past history of medical illness or substance use were summarised in frequency and percentages. The Chi-square test was applied to evaluate the association between categorical variables (like the association of cyberbullying victimisation with socio-demographics) and clinical parameters. The p-values less than 0.05 were considered significant.

RESULTS

There were a total of 502 medical students with a mean age of 20.65 years (SD=1.59). Of all, 259 (51.60%) participants were of <20 years of age and 243 (48.40%) were >20 years. The majority of participants 424 (84.40%) were from 2nd and 3rd-year MBBS. Among all, most were from nuclear families 346 (68.93%), and had no history of medical illness 498 (99.2%) or substance use 499 (99.2%). Around two-thirds of participants, 321 (63.94%) were using mobile phones for less than five hours and only 12 (2.39%) were using them for more than 10 hours. Hours of mobile use were categorised in to three groups after validation based on pilot study conducted on 100 participants supervised and checked by a statistician and a psychiatrist. The most common social media used by participants was Instagram 312 (62.15%) followed by WhatsApp 128 (25.5%), Facebook 23 (4.58%), and Twitter 21 (4.18%). According to participants, cyberbullying was mostly done on Instagram 186 (37.05%) followed by Twitter 101 (20.12%), Facebook 98 (19.52%), and WhatsApp 95 (18.93%) [Table/Fig-1].

[Table/Fig-2] shows the severity of cyberbullying based on percentile scores on the CYBVICS scale. The mean score for cyberbullying was 20.75±4.92. Among all participants, around half (238, 47.14%) of the participants were not victims of cyberbullying, 71 (14.14%) were victims of mild cyberbullying, whereas, 90 (17.93%) and 103 (20.52%) have experienced moderate and severe cyberbullying, respectively.

Characteristic		Frequency (N=502)	Percentage %
Age (Years)	<20	259	51.60
	>20	243	48.40
Gender	Male	338	67.33
	Female	164	32.67
Year of MBBS	First MBBS	24	4.78
	Second MBBS	176	35.06
	Third MBBS-1	158	31.47
	Third MBBS-2	90	17.93
	Intern Doctors	54	10.76
Family type	Nuclear	346	68.93
	Joint	156	31.07
Past history of medical illness	Yes	4	0.8
	No	498	99.2
Substance history	Yes	3	0.6
	No	499	99.4
Duration of mobile use (Hours)*	0-5	321	63.94
	06-10	169	33.67
	>10	12	2.39
Use of Social media apps by participants for a maximum duration	Instagram	312	62.15
	Facebook	23	4.58
	Twitter	21	4.18
	Snapchat	18	3.59
	WhatsApp	128	25.50
Social media platforms where maximum cyberbullying is being done according to participants	Instagram	186	37.05
	Twitter	101	20.12
	Facebook	98	19.52
	WhatsApp	95	18.93
	Snapchat	22	4.38

[Table/Fig-1]: Demographic characteristics.
MBBS: Bachelor of Medicine and Bachelor of Surgery
*Hours of mobile use were categorised in to THREE groups after validation based on pilot study conducted on 100 participants supervised and checked by a statistician and a psychiatrist.

Percentile on CYBVICS score*	Category	Frequency (N)	Percentage (%)
0th-25th (0-18)	Normal	238	47.41
25th-50th (19)	Mild	71	14.14
50th-75th (22)	Moderate	90	17.93
75th-100th (64)	Severe	103	20.52

[Table/Fig-2]: Severity of Cyberbullying Victimisation according to CYBVICS Score
CYBVICS: Cyber-victimisation scale
*Scoring based on taking the 25, 50, 75 percentiles as the cut-off point as suggested by author of CYBVICS

Among all participants, 20 (4%) and 16 (3.19%) were screened positive for depression and anxiety, respectively. The mean score for depression was 2.29±3.45 and for anxiety was 2.02±3.06. [Table/Fig-3] shows that cyberbullying was significantly associated with depression (p<0.0001). It was seen that the increasing severity of cyberbullying was associated with increased severity of depression.

Total CYBVICS#	PHQ-9		Odds ratio	
	Screened negative for Depression (PHQ-9<10)	Screened positive for Depression (PHQ-9>10)		
Normal (below 25th percentile)	236 (47%)	2 (0.40%)	1	Chi-square (χ2)=39.329 **p=<0.0001***
Mild (25th- 50th percentile)	71 (14.14%)	0 (0%)	0.69	
Moderate (50th-75th percentile)	87 (17.33%)	3 (0.60%)	4.07	
Severe (above 75th percentile)	88 (17.53%)	15 (3%)	20.11	
Total	482 (96%)	20 (4%)		

[Table/Fig-3]: Association of the severity of cyberbullying with depression.
*p≤0.05=significant; Chi-square test; confidence interval=95%
CYBVICS: Cyber-victimisation scale; PHQ-9: Patient health questionnaire
#Scoring based on taking the 25, 50, 75 percentiles as the cut-off point as suggested by author of CYBVICS

[Table/Fig-4] shows that cyberbullying was associated with anxiety, which was statistically significant (p<0.0001). An increase in the severity of cyberbullying was associated with the increasing severity of anxiety.

Total CYBVICS#	GAD-7		Odds ratio	
	Screened negative for Anxiety (GAD<10)	Screened positive for Anxiety (GAD-7>10)		
Normal (below 25th percentile)	237 (47.21%)	1 (0.20%)	1	Chi-square (χ²)=21.686 **p=<0.0001***
Mild (25th-50th percentile)	70 (13.94%)	1 (0.20%)	3.39	
Moderate (50th-75th percentile)	87 (17.33%)	3 (0.60%)	8.17	
Severe (above 75th percentile)	92 (18.33%)	11 (2.19%)	28.34	
Total	486 (96.81%)	16 (3.19%)		

[Table/Fig-4]: Association of the severity of cyberbullying with anxiety.
*p≤0.05=significant; Chi-square test; confidence interval=95%
CYBVICS: Cyber-victimisation scale; GAD-7: Generalised Anxiety disorder (GAD-7); questionnaire
#Scoring based on taking the 25, 50, 75 percentiles as the cut-off point as suggested by author of CYBVICS

On analysing the association of socio-demographic variables with cyberbullying, it was seen that comparatively older (>20 years) participants were more exposed to cyberbullying as compared to younger, which was statistically significant (p<0.0001). Cyberbullying was experienced by males more than by females, but no statistical significance was found. Medical students studying in their second and third-year experienced cyberbullying more than other-year students (p<0.0001). Statistically significant association was found between cyberbullying and substance use (p=0.025)

as well as the duration of mobile use (p=0.003). No statistically significant association was found between cyberbullying and other demographic variables like family type, past history of medical illness, or family history [Table/Fig-5].

The present study found that around 20 (4%) participants screened positive for depression and around 16 (3.19%) participants screened positive for anxiety. Cyberbullying was associated with significant depressive and anxiety symptoms (p<0.0001). The finding was

Characteristic	Frequency (N=502)	Percentage %	Normal	Mild	Moderate	Severe	Chi-square (χ^2) value	p-value
Age (years)								
≤20	259	51.6	140	48	34	37	20.938	**<0.0001**
>20	243	48.4	98	23	56	66		
Gender								
Male	338	67.33	159	51	62	66	0.102	0.75
Female	164	32.67	79	20	28	37		
Year of MBBS								
First	24	4.78	14	3	3	4	40.675	**<0.0001**
Second year	176	35.06	99	24	26	27		
Third First	158	31.47	71	32	27	28		
Final Year	90	17.93	24	10	23	33		
Intern	54	10.76	30	2	11	11		
Family type								
Nuclear	346	68.93	163	37	65	81	3.675	**0.06**
Joint	156	31.07	75	34	25	22		
Past history of medical illness								
Yes	4	0.8	3	0	0	1	0.369	0.54
No	498	99.2	235	71	90	102		
Substance history								
Yes	3	0.6	0	0	1	2	4.971	**0.025**
No	499	99.4	238	71	89	101		
Duration of mobile use (Hours)								
0-5	321	63.94	170	45	54	52	19.823	**0.003**
06-10	169	33.67	61	26	35	47		
>10	12	2.39	3	1	1	5		

[Table/Fig-5]: Association of the severity of cyberbullying with socio-demographic factors.
*p≤0.05=significant; Chi-square test; confidence interval=95%
CYBVICS: Cyber-Victimisation Scale

DISCUSSION

Cyberbullying is an emerging issue, prevalent not only among adolescents but also among university students. In this era of digitalisation and technology, the increasing use of electronic gadgets has reduced the distance between individuals and has connected them virtually round the clock; which has come up with new ways of bullying. Due to certain factors, like the anonymity of the accused, and the almost permanent availability of the content used to bully; the impact caused by cyberbullying is greater than that is caused by traditional bullying.

A study conducted by Hoff DL et al., in the USA reported 196 (56%) victims of cyberbullying and the 2017 Pew Research Centre reported a 297 (40%) prevalence of cyberbullying [39,40]. The present study revealed similar findings, half of the participants 264 (52.86%) were victims of cyberbullying, among which 193 (38.45%) were victims of moderate to severe cyberbullying. The finding was comparable to that of other studies, which showed a prevalence of 143 (51.8%) in USA by Smith J and Yoon J; and 368 (55.3%) in Turkey by Dilmac B [33,41]. Some other research studies suggested lower prevalence rates ranging from 168 (9%) by Paullet K and Pinchot J [42] to 51 (15%) by Finn J [43] 2004 in USA, 58 (23%) by Akbulut Y and Eristi B, 2011 [28]; whereas some reported higher prevalence rates as 479 (60%) by Schenk AM et al., 2013 [34] in west Virginia university, and 130 (60%) in China conducted by Beran T and Li Q (2005) [44]. Different prevalence rates can be attributed to the differences in geographical area, social support, level of education, personality factors, general familial environment, different instruments used, etc.

comparable to other studies such as, Corcoran L and Mc Guckin C 2013; Przybylski AK and Bowes L (2017) reported that adolescent victims had increased depressive, and anxiety symptoms, suicidal thoughts, loneliness, and somatic symptoms [26,27]. Smith J and Yoon J (2013) reported a 13.2% prevalence of depression due to cyberbullying [33]. Previous studies have also shown that cyberbullying victimisation has a positive relationship with depression [26-28].

The severity of cyberbullying was linked to the severity of depression and anxiety. It was observed that students experiencing cyberbullying had almost 2, 4, 20 times {OR 1.69, 4.07, 20.11 (95%CI)} the odds of having significant depressive symptoms with mild, moderate, severe cyberbullying victimisation as compared to those who were not victims, respectively. Similarly, Schenk AM et al., (2013) found that students who experienced cyberbullying in college had higher scores on depression [34]. A similar finding was seen in a study by Selkie EM et al., demonstrated that participants who had experienced cyberbullying had almost three times the odds {OR 2.9 (95% CI)} of meeting clinical criteria for depression compared to those with no experience [45].

The study revealed that males were victims of cyberbullying more than females, though no statistical significance was found. Previous studies showed similar results. Such as studies from Germany by Katzer C et al., and Wong DS et al., in Hong Kong, found that males reported more victimisation than females [46,47].

Cyberbullying victimisation is currently a growing concern drawing attention of mental health professional because of its significant

negative impact on mental health. Very little research has been done in India, especially among medical students assessing the prevalence of cyberbullying victimisation and its impact on psychological well-being.

Limitation(s)

There were a few limitations of this study. First, it was a cross-sectional study, no longitudinal follow-up was done so, long-term or delayed effects of cyberbullying victimisation were not assessed, as the longitudinal follow-up of participants would help in a better understanding of the impact of cyberbullying victimisation on mental health. Sample size was not calculated by any statistical method, the sample was taken using non probability convenient sampling, so the result cannot be generalised to the population. Secondly, study participants were only medical students, students from different educational backgrounds may have different experiences. Another limitation of the study was the use of self-reported instruments. Self-report instruments come with reliability and internal validity issues, as they might be understood or interpreted differently by each participant and they might mislead the researchers by providing incorrect answers to hide details of their victimisation.

CONCLUSION(S)

To conclude, it was observed that cyberbullying victimisation was prevalent among medical students and is having a strong negative impact on the psychological well-being of students, causing significant depressive and anxiety symptoms. The severity of impact was increasing with the increasing severity of cyberbullying victimisation. Such studies will help healthcare professionals and institutions to educate students about cyberbullying and take the necessary steps that will help students to cope with the negative consequences. To promote prevention and intervention authorities of institutions should create an easily accessible reporting system/tool, where students can freely report incidents of cyberbullying anonymously and comfortably. Institutions can work collaboratively with professional organisations or NGOs working in the field of cyberbullying. Institute can train, educate students regarding cyberbullying.

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