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Prevalence of cyberbullying and its effects on studies, personal life and mental health of medical students in a private medical university in Malaysia

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Introduction: Cyberbullying is the use of information and communication technologies to support deliberate, repeated, and hostile behaviour by an individual or group to harm others. Cyberbullying may negatively affect the studies, personal lives and mental health of victims who are students. We report on the prevalence of cyberbullying and its effects on personal lives, studies, and mental health among medical students.

Methods: A self-administered online questionnaire was used to collect demographic data, determine the prevalence of cyberbullying, and its effects on personal lives, studies and mental health of medical students. Student-t test was used for comparison of means, and logistic analysis was used to identify predictors of being cyberbullied.

Results: 40 out of 261 study participants reported being cyberbullied in the preceding 6 months (prevalence: 15.3%). Cyberbullying did not negatively affect the studies and personal lives of victims. Most victims reported none or minimal-to-mild depression. Malay ethnicity was a predictor of being cyberbullied. Female students were 5-times more likely to be cyberbullied because of their lifestyle compared to males.

Conclusion: The prevalence of cyberbullying among medical students in this study was relatively low compared to reports from other universities. Cyberbullying had little to no effect on the studies, personal life, and mental health of medical students in our study. Malay ethnicity was a significant predictor to being cyberbullied. Females were more likely to be cyberbullied for their lifestyle. Support systems, awareness of good internet etiquette, and promotion of early help-seeking behaviour, especially targeted at identified vulnerable groups, should be put in place to check the practice of cyberbullying.

Keywords: *cyberbullying, Malaysia, medical students, personal life, mental health*

INTRODUCTION

Cyberbullying is defined as wilful and repeated harm inflicted through the medium of electronic text.[1]

Victims of cyberbullying may suffer from depression, anxiety, stress, and poor social skills.[2] The medical curriculum, with its heavy workload, frequent assessments, and competitive environment, predisposes medical students to high levels of stress and requires good mental health to perform well. The negative psychological effects of being cyberbullied may negatively impact the ability of medical students to cope with their studies, and as a result, they may perform poorly in the studies and have reduced concentration in classes.[2]

A study among 464 undergraduate students from six universities in Greece reported a low prevalence of cyberbullying of 3.2%. The male gender was identified as a predisposing factor. The negative effects of being cyberbullied included loneliness and low self-esteem.[3] In contrast, a Malaysian study among 712 private and public university students reported a much higher prevalence of cyberbullying of 66% with wide-ranging negative effects including feelings of insecurity, over-sensitivity to surroundings, avoidance of internet use and electronic devices, and in severe cases, suicidal thoughts and suicidal attempts among cyberbullied victims. Male gender and Malay ethnicity were identified as predictors of being cyberbullied.[4]

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To date, there has been limited data on cyberbullying among Malaysian medical students, with only one such study in a public medical university of Malaysia showing a high prevalence of 24.4% cyberbullying over the past six months.[5] The prevalence of mild depression among cyberbullied victims was 34.0%.[5] We researched the prevalence of cyberbullying, possible predisposing factors, and its effects on the studies and personal lives of medical students at a private medical university in Malaysia.

METHODS

Study design, setting and sample size

A cross-sectional convenience sampling study was conducted among the medical students at a private medical university in Malaysia, from January to June 2020, using an online questionnaire. There were 1361 medical students at various stages of medical studies at the time of this study. The calculated sample size required for statistical significance was 300 with 95% confidence level (CI) with 5% margin of error. The formula used to derive the sample size was as follows:

$$Sample\ size = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1+\left(\frac{z^2 \times p(1-p)}{e^2 N}\right)}$$

N = population size, e = margin of error (percentage in decimal form), z = *z*-score, where *z*-score is taken to be 1.96 to achieve a confidence interval of 95%.

Inclusion and exclusion criteria

All medical students were eligible. Non-medical students and those who declined to participate were excluded.

Study tool

The study tool was a 10-minute online questionnaire created with Google Forms. The link to the questionnaire was distributed to all students through their respective student representatives. Participation was voluntary, with consent obtained online. The questionnaire consisted of 5 parts, from A to E. Part A contained questions to capture social demographic data, including types of social media used, and time spent on social media. This part was intended to see if there is any relationship between certain social demographic factors and being cyberbullied. In Part B, participants were required to view a short Youtube video on what cyberbullying was, to ensure they understood if they had been cyberbullied before providing their response. Participants were then asked if they had been cyberbullied in the last six months, which will give the prevalence of cyberbullying.[6] Participants were questioned if they had been cyberbullied only for the past six months to ensure that their recall of the cyberbullying and the negative effects was more current, and therefore, more reliable. As we had limited the timeframe of the question, we did not include a question to explore if the participants had ever been victims of cyberbullying for those who answered 'No' to the initial question. Part C was adapted from a similar study which was done on the non-medical students in the University of London.[7] This part contained questions which explored personality, physical appearance, personal beliefs, lifestyle, ethnicity, political opinion, sexual orientation, and disability as possible aspects on which the victims were cyberbullied. Questions in Part D explored the possible negative effects of cyberbullying on the studies and social lives of

the students using a 5-point Likert scale where 1 represented "strongly disagree", 2 "disagree", 3 "unsure or neutral", 4 "agree", and 5 "strongly agree". In Part E, we had used the Patient Health Questionnaire-9 (PHQ-9), a multipurpose screening instrument and freely available in the public domain, to assess the severity of depression among cyberbullied victims. Participants were scored from 0-27. The severity of depression was determined by the total score, with 0-4 suggesting minimal or no depression, 5-9 as mild, 10-14 as moderate, 15-19 as moderately severe, and 20-27 as severe depression. The PHQ-9 recorded 88% sensitivity and specificity.[8] As Part C was adapted from another source, the questionnaire was piloted and validated locally with randomly selected medical students at the university. Minor post-piloting adjustments were made to the questionnaire, mainly to facilitate better comprehension before distribution.

Statistical analyses

Descriptive analysis was used to delineate the demographic data from Part A and the prevalence of cyberbullying in Part B. One-sample Student t-test was used to determine the effect of cyberbullying on students' studies and social lives using data from Part C. Binary regression analysis was used to identify if gender, ethnicity, types of social media, and time spent on social media were predictors of being cyberbullied. A *p*-value <0.05 with a 95% confidence interval was considered statistically significant. All statistical analyses were performed using Statistical Package for the Social Sciences (SPSS) version 26 for Windows 10. This research was approved by the university's Joint-Committee on Research and Ethics on April 16, 2020 and assigned the project number CSc/Sem6(02)2020.

RESULTS

Demography

Two-hundred-sixty-one students participated. The male: female ratio was 3:5. The majority were Chinese (177, 67.8%), followed by Indians (39, 14.9%), Malays (17, 6.5%) and others (28, 10.7%). The mean age was 22. The sample population in this study was reflective of the student composition of the university at the time. Majority were 3rd year students (106, 40.5%). The top 3 most popular social media applications used were WhatsApp (258, 98.9%), Instagram (190, 72.8%) and Facebook (111, 42.5%). A total of 96 (36%) participants spent 3-4 hours on social media daily, 81 (31%) spent 1-2 hours, 65 (24.9%) spent more than 4 hours, and only 21 (8%) spent less than 1 hour. The demographic data are summarised in Table I.

Table I: Demographic data of participants

DEMOGRAPHIC PARAMETER	NUMBER (N)	%
GENDER		
Female	102	39.1
Male	159	60.9
ETHNICITY		
Malay	17	6.5
Chinese	177	67.8
Indian	39	14.9
Others	28	10.7

Table I: Demographic data of participants

AGE		
<20	23	8.8
20-25	231	88.5
>25	7	2.7
SOCIAL MEDIA APPS USED		
Whatsapp	258	98.9
Facebook	111	42.5
Instagram	190	72.8
Facebook messenger	102	39.1
Snapchat	86	33.0
WeChat	35	13.4
Twitter	34	13.0
Skype	22	8.4
Facetime	18	6.9
Dating apps	6	2.3
TIME SPENT ON SOCIAL MEDIA		
< 1 hour	21	8.0
Between 1-2 hours	81	31.0
Between 3-4 hours	94	36.0
> 4 hours	65	24.9

Prevalence of cyberbullying

Forty students reported being cyberbullied in the preceding 6 months, with a prevalence of 15.3%. Seventeen (42.5%) were males and 23 (57.5%) were females with no statistically significant difference between the genders ($p = 0.725$).

Effects of being cyberbullied on personal life and studies

Being cyberbullied had no significant negative effect on the studies and personal lives of the students, including class attendance ($p = 0.001$), meeting deadlines ($p = 0.013$) and personal hygiene ($p = 0.001$). However, feelings of 'poor self-image' and affected 'relationship with friends' were reported, although they were not statistically significant ($p = 0.917$ and 0.514, respectively). The results are summarized in Table II.

Table II: Effects of being cyberbullied on medical students' personal life and studies

VARIABLES	MEAN*	SD	*p* **
Academic performance adversely affected	2.78	1.493	0.347
Declining class attendance	2.28	1.261	0.001
Difficulty in meeting deadlines	2.45	1.339	0.013
Hard to focus in class	2.98	1.609	0.922
Trouble falling asleep	3.00	1.485	1.000
Trouble staying asleep	2.63	1.444	0.109
Sleeping more than usual	2.73	1.450	0.238
Struggling to maintain personal hygiene	2.20	1.344	0.001
Poor self-image	3.03	1.510	0.917
Change in appetite	2.83	1.375	0.426
Relationship with family affected	2.78	1.493	0.347
Relationship with friends affected	3.15	1.442	0.514

* *One-sample t-test using "3" as test value. Mean values above 3 indicates agreement with the statements and values below 3 indicates disagreement with the statements.*
SD: Standard deviation.
** *p-value with 95% confidence interval.*

Effects of being cyberbullied on depression

Among the 40 students who were cyberbullied, 15 (37.5%) reported feeling minimal or no depression, and 13 (32.5%) reported feeling mildly depressed. However, 5 (12.5%) students reported feeling moderately depressed, 5 (12.5%) reported feeling moderate-to-severely depressed, and 2 (5%) feeling severely depressed.

Using "minimal/none" as a comparator, there was no statistically significant difference in each of the depression category. Only 8 (20%) respondents attributed their depression to being cyberbullied, while 12 (30%) reported they were depressed even before being cyberbullied. Twenty (50%) were unsure if their depression was due to being cyberbullied.

Twelve respondents (6 males and 6 females) had suicidal thoughts in the preceding month, while 8 (4 males and 4 females) had attempted suicide in the past.

Predictors of being cyberbullied

Ethnicity was a statistically significant predictor of being cyberbullied (p = 0.017) with Malay ethnicity

being the significant predictor (p=0.030). Gender, types of social media used, and time spent on social media were not significant predictors.

Aspects of being cyberbullied

Lifestyle was the only statistically significant aspect of being cyberbullied (p = 0.027) where female students were 5-times more likely to be cyberbullied compared to male students. Personality, physical appearance, beliefs, ethnicity, political opinion, sexual orientation, and disability were not significant aspects, as shown in Table III.

Table III: Aspects of being cyberbullied

Aspect	Total (%)	Male (%)	Female (%)	p value*	Odds ratio (female/male)
Personality	22 (55%)	9 (52.9%)	13 (56.5%)	0.538	1.16
Physical appearance	16 (40%)	6 (35.3%)	10 (43.5%)	0.424	1.41
Personal beliefs	11 (27.5%)	6 (35.3%)	5 (21.7%)	0.276	0.51
Lifestyle	15 (37.5%)	3 (17.6%)	12 (52.3%)	0.027	5.10
Ethnicity	11 (27.5%)	5 (29.4%)	6 (26.1%)	0.546	0.85
Political opinion	2 (5%)	1 (5.9%)	1 (4.3%)	0.676	0.73
Sexual orientation	2 (5%)	2 (11.8%)	0 (0%)	0.174	-
Disability	1 (2.5%)	0 (0%)	1 (4.3%)	0.575	-
Others	7 (17.5%)	3 (17.6%)	4 (17.4%)	0.649	0.98

* *p-value with 95% confidence interval*

DISCUSSION

This study on cyberbullying was done at a private medical university and the participants were medical students. The prevalence of cyberbullying in our study was 15.3% (40/261). Their personal lives and studies were not adversely affected as a result of being cyberbullied. Although they reported varying degrees of depression, with the majority having experienced minimal or no depression, more worrying were the few who had suicidal thoughts or had attempted suicide.

Malay ethnicity was the only significant predictor of being cyberbullied. Lifestyle was the only identified aspect of being cyberbullied with females being 5-times more likely than males to be cyberbullied in this aspect.

Prevalence of cyberbullying

Local studies have reported that a significant percentage of Malaysian young adults have been cyberbullied, ranging from 18.6% to 66%.[4,5,9] In comparison, the prevalence of being cyberbullied in our study was relatively low (15.3%) for this age group. In the three studies mentioned, the majority of the students were Malays making up 52.5%, 49.6% and 65.8% respectively, whereas in our study,

the majority were Chinese (67.8%) and the Malay students were few in number (6.5%). This may explain the difference in the prevalence between our study and the aforementioned studies. Nevertheless, it is noteworthy that Malay ethnicity had the highest prevalence of being cyberbullied and was a significant predictor of being cyberbullied in both studies. The reasons for this will be discussed in a later section.

Interestingly, a study conducted among Malaysian medical students in a public university showed a prevalence of cyberbullying of 24.4%, which was higher compared to our study (15.3%).[5] The difference in results may be due to our research being carried out at a private medical university with well-established guidelines and policies for the proper use of social media.

Effect on studies and personal life

Being cyberbullied did not adversely affect the studies or personal life, although some reported varying degrees of depression. This is in sharp contrast to another study in Israel among undergraduate students, which reported significant academic, interpersonal, and family problems.[10] Other studies have reported negative effects on mental health, completion of assignments, and relationships outside of the university.[11,12]

The difference in our results may be due to increased awareness of the negative consequences of cyberbullying and early help-seeking behaviours due to the easy accessibility of various support services offered by the university, including counselling services, psychiatrists and clinical psychologists, as well as mentoring programmes.

Depression severity as a result of cyberbullying

Most of the students reported having only minimal to mild depression from being cyberbullied. This differed from the other studies, which showed the majority of cyberbullied victims had experienced negative emotions including depression, low self-esteem resulting in avoidance of socialising, use of computers and anxiety upon receiving emails or messages.[3-5] The difference may be due to early help-seeking behaviours among the participants in our study, although we did not explore this aspect in our study. Similarly, a low prevalence of depression was reported among students who were cyberbullied may be because they had good coping strategies, including early formal, and informal help-seeking behaviour, presence of friends with similar academic stressors and a good mentoring system.[13] The private medical university, which was the study site, had heavily invested on counselling facilities and helplines, which may have helped students to cope with negative emotions after experiencing cyberbullying.

Malay ethnicity was a significant predictor of being cyberbullied

Malay ethnicity was the single significant predictor of being cyberbullied in our study (p = 0.017) although there were only 17 (6.5%) Malays among the 261 students surveyed. The Research Institute for Malaysian Youth Development reported the highest prevalence of cyberbullying (67.5%) among Malay youths compared to other races.[14] In contrast, a study conducted among undergraduate engineering, computing, and management students in a Malaysian public university, where the majority of the respondents were Malays, reported no significant relationship

between ethnicity and cyberbullying behaviours.[15] A literature review of 14 studies conducted among college and university students found that students of minority races often faced bias and aggression from non-minority students.[16] Although Malay students were the minority in our study, we could not ascertain if they were bullied by other Malay students or students from other ethnic groups.

Females were more likely to be cyberbullied for their lifestyle

Our study found that female students were 5-times more likely to be cyberbullied because of their lifestyle compared with males. These lifestyle choices include the way in which one chooses to live or behave. More females than males were cyberbullied for their lifestyle through the spreading of rumours, online stalking and threats.[17] This was attributed to females spending more time on social media and other communication platforms.[16] Similarly, in our study, 23.4% of females spent an average of 3-4 hours on social media compared to 12.6% of males, which may account for the higher chances of females being cyberbullied.

STUDY LIMITATIONS

The total number of respondents in our study was slightly lower than the targeted sample size of 300 students due to time constraints in the collection of data. This may have resulted in lower reported prevalence of cyberbullying in this study. There was a possible occurrence of self-selection bias in our study as the participants were recruited through convenience sampling, which may falsely over-represent or under-represent individuals who have experienced cyberbullying. Although the Malay race was a significant predictor for being cyberbullied, we were unable to ascertain if they were bullied by fellow Malays or other races as it was not part of our study objective. Follow-up studies should be done to identify the characteristics of cyberbullies and the help-seeking behaviours of cyberbullying victims. We note that more senior clinical students responded to our survey on cyberbullying. This may be due to their higher use of the internet and social media in the course of their studies. These two factors have been associated with an increased risk of cyberbullying. In addition, senior students have been reported to be more impulsive and less sympathetic to fellow students.[18]

CONCLUSION

The prevalence of cyberbullying among medical students in our study was low compared to reports from other universities. Although Malays were the minority ethnicity in our study, being a Malay was a significant predictor of being cyberbullied. Females were 5-times more likely to be cyberbullied for their lifestyle compared to males. Being cyberbullied did not negatively affect the studies and personal life of the students, and most reported only minimal or mild depression.

Although the prevalence is relatively low, anti-cyberbullying programmes, including a strong student support service and a suicide prevention hotline, must be put in place by the university. Awareness of the ethical use of internet resources and appropriate measures should be emphasised to the students from the very early phase of their studies. Faculty members should be trained to recognize red flags in students who exhibit signs of being cyberbullied.[19-21]

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