

Knowledge, attitude and psychological impact of cyberbullying among adolescents. A cross-sectional study

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ABSTRACT

Purpose: To identify the awareness, behaviour and psychological impact of cyberbullying among adolescent. **Method:** A Cross-sectional questionnaire-based study conducted on secondary school students from grades 9-12th. The study got approval from the Institutional Research Board. The Inclusion criterion was school students of all nationalities who were willing to participate. Signed informed consent signed was taken. We used a *P* value of < 0.05 and a 95% confidence interval (CI). **Result:** Out of 513 enrolled, 450 completed the survey (response rate 87.7%). Age ranged between 13 to 20 years of them 303 (67.3%) were female. Awareness of cyberbullying was 96.2%. The prevalence of cyberbullying among adolescence was 22.2% (95% CI: 18.89-26.93). 42% of Victims reported cyberbully event leading to stoppage in 78.6% of cases. Most of the victims reported to their parents followed by friends then cyber helpline or Police. Characteristics of perpetrators were males, below-average academic performance and social relations, from same batch, and had emotionally unstable personalities. Association of being a victim does not relate to their Age, gender, grade, or parent's education but relate to their nationality (*P* < 0.001) and being younger siblings (*P* < 0.027). Association between event reporting and gender was not significant (*P* < 0.859). Association between worsening social relationships (teachers and parents) (*P* < 0.001), feeling neglected (*P* < 0.001), personality type (agreeableness and emotional instability) (*P* < 0.016) and being a Cyberbully victim was statistically significant. Association of depression and anxiety with being a cyberbully victim was statistically significant (*P* < 0.001) and directly proportional to the severity. **Conclusion:** High rate of awareness and Low prevalence of cyberbullying was found among adolescence. High risk of psychological problems was reported and a good social relationship (teachers and parents) was an important protective factor from it.

Keywords: Adolescence, anxiety, cyberbully, depression, psychology

Introduction

Digital technology is an enabling tool to interact, communicate, and continue their responsibilities.^[1] A surge in the utilization of the Internet has been reported in the general population.^[2] However, this has led to an issue of concern among the population regarding online harassment or cyberbullying.^[3] Cyberbullying is not limited

by boundaries and have been recognized as a severe public health problem.^[4,5] Cyberbullying reaches an unlimited audience affecting frequently, emotionally, severely and may leave a permanent mark.^[2,4] It has been suggested that the perpetrators tend to lack accountability and awareness of the consequences of their actions as they cannot see the faces of the victims.^[4] Cyberbullying may lead to negative emotional, social, and psychological consequences causing depression, anxiety, anger, and low academic performance.^[5]

Worldwide studies indicate a global rise in the Cyberbullying phenomenon.^[2,6] Adolescents are at high risk due to their internet

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use for interaction and academic purposes.^[5] Adolescence is the phase of life between childhood and adulthood.^[7] Cyberbullying represents a threat to the mental development and well-being of adolescents.^[5] 20 to 40% of adolescents experienced cyberbullying at least once in their lifetime.^[2] Studies found wide variations in cyberbullying prevalence rates worldwide.^[5,7] These varying results could be due to different measurement factors and methodologies.^[4] However, all research concluded that all victims suffered psychological impacts.^[6,7] Physical problems also tend to develop as a result of the psychological impact.^[8] About 48% admit the use of social media applications without adult supervision and are likely to avoid seeking help in situations like cyberbullying because they fear they will be restricted from using social media.^[3] Studies show that victims may display externalizing behaviors due to their inability to express thoughts and feelings verbally.^[9] Most of them distance themselves from their friends and family, resulting in even greater loneliness as technology is intended to expand connections.^[8] Unfortunately, articles have reported cases of youngsters who have committed suicide after being subjected to online harassment.^[8,10]

UAE being an international hub and the highest social media users among Gulf nations, is also a victim of cyberbullying.^[7] 60% in Gulf countries confessed to having cyberbullying among peers and in UAE it was 20.9%.^[3] Available data on the prevalence of cyberbullying amongst the adolescent population in UAE are varying and scarce.^[7] UNICEF also states that “no child is absolutely safe in the digital world.”^[4] Some study reports the prevalence of Cyberbullying being 4.7% others to be 33.3%.^[6,7] Studies show inconsistencies in the prevalence rates of cyberbullying, measured in the same country during the same period.^[4] Furthermore, Lockdowns and social distancing during the COVID pandemic have increased the use of the internet and the risk of exposure to cyberbullying.^[1,3] Since there are wide variations in cyberbullying rates in UAE, It needs of hour to collect data on the prevalence of cyberbullying amongst the adolescent population to tackle the undisclosed endemic of cyberbullying.^[7] This study will help to identify the graveness of problem and psychological impact among adolescents and provide data to be used by Authorities to develop procedures to limit this problem.

Materials and Method

This is a cross-sectional questionnaire-based study. The study duration was from Nov 2021 to Jan 2022. The study got approval from the Institutional Research Board Ref. No. IRB/COM/STD/34/Nov-2021. The study population was secondary school students from grades 9-12th from two selected schools. The Inclusion criterion was school students of all nationalities who were willing to participate. Those who refused to participate or were absent were excluded. Informed consent signed by the parent for participants less than 18 years old and by students aged 18 years or above were taken. The data collection was in accordance with the Declaration of Helsinki. For calculating the sample size of the survey among

a population of 100,000, we assumed that the prevalence of Cyberbullying among adolescents would be 20.9%.^[3] To achieve a 95% confidence interval (CI), 5% error margin and 1% design effect, 254 individuals were required. To compensate for the loss of data/nonresponse, we increased the sample by 10%, so the calculated minimum sample size was 280. OpenEpi, Version 3, the open-source calculator was used.

Questionnaire was specially designed for this study from a validated research instrument. It comprised questions on demographics, history of being bullied, and factors related to cyberbullying. Two standardized questionnaires CES-D and BAI were used to assess depression and anxiety among participants. Center for Epidemiologic Studies Depression Scale (CES-D) comprises 20 items measuring depression.^[11] Beck Anxiety Inventory (BAI) comprises 21 items to measure anxiety.^[12] The questionnaire was validated by a psychologist and a physician. The suggestions of the experts were taken into consideration and a pilot study was conducted involving 5 participants with the final questionnaire. No issues were observed. Final approval was obtained from the selected schools and the research team. Medical students interacted with participants by giving a brief description of the purpose of the study, its objectives, and brief instructions to fill out the questionnaire. The final questionnaire was provided in online and printed forms, as required. They were allowed to proceed only if they agreed to participate and were allowed to withdraw themselves at any stage if they were not willing to proceed. No incentives or rewards were offered to the participants, and their confidentiality was ensured.

SPSS (Statistical Package for Social Sciences version 27) statistical software was used for data analysis. Descriptive data were presented as frequencies and percentages. A Chi-square test was used to show the significant association between cyberbullying and the selected variables. We used a *P* value of < 0.05 and a 95% confidence interval (CI).

Result

Out of 513 enrolled, 450 completed the survey (response rate 87.7%). Age of the participants ranged between 13 to 20 years (Median 16, Iqr 2) of them 303 (67.3%) were female [Table 1]. There were 61.6% between 17 to 20 years of age and 64% were from grade 11-12th. 96.2% of them were aware of cyberbullying. School and internet played an important role in awareness compared to parents and friends. The prevalence of cyberbullying was found to be 22.2% (95% CI: 18.89 – 26.93). 61% of the victims were aware of their bully's identity. 42% of Victims reported cyberbullying. Most of the victims reported the event to their parents (40%), followed by their friends (31%), School faculty (14%), Cyber helpline (10%) and police (5%) [Figure 1]. Cyberbullying stopped in 78.6% of cases reported [Figure 2]. Characteristics of perpetrators described by the victims were males, below-average academic performance and social relations,

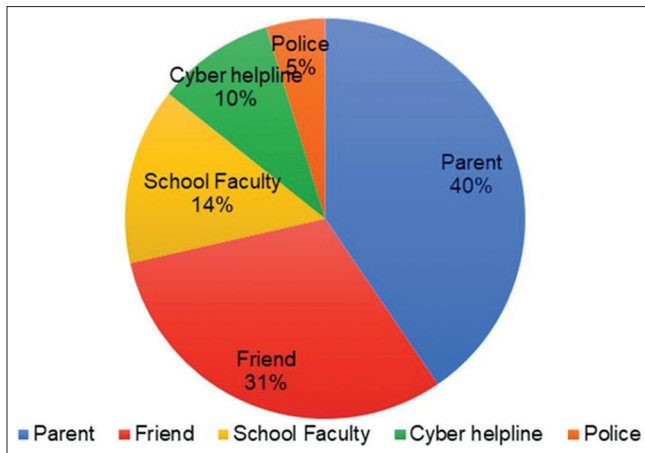


Figure 1: Reporting of Cyberbullying

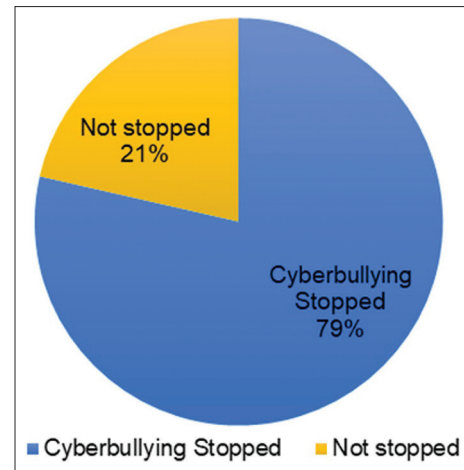


Figure 2: Stoppage of cyberbullying after reporting

Table 1: Sociodemographic characteristics of participants

Variable	Subcategories	Number	%	Total
Age (years)	13-16	173	38.4	450
	17-20	277	61.6	
Grade	9 th -10 th	162	36	450
	11 th -12 th	288	64	
Gender	Male	147	32.7	450
	Female	303	67.3	
Nationality	Eastern Mediterranean	52	11.6	450
	Southeast Asian	370	82.2	
	Others	28	6.2	
Father's education	Secondary education or less	55	13.4	410
	College/Higher diploma/UG	173	42.2	
	PG	182	44.4	
Mother's education	Secondary education or less	77	19.1	403
	College/Higher diploma/UG	170	42.2	
	PG	156	38.7	
Order of sibling	Oldest	171	44.6	383
	Middle	75	19.6	
	Youngest	137	35.8	
Awareness of cyberbullying	Yes	433	96.2	450
	No	17	3.8	
Source of awareness	School	232	53.6	433
	Internet	146	33.7	
	Friends	31	7.2	
	Parents	24	5.5	
Faced Cyberbullying	Yes	100	22.2	450
	No	350	77.8	
Event reported	Yes	42	42	100
	No	58	58	
Stopped after reporting	Yes	33	78.6	42
	No	9	21.4	

from the same batch, and had emotionally unstable personalities [Table 2].

Cyberbullying is significantly associated with the nationality ($P < 0.001$) and the order of siblings ($P < 0.027$) Table 3. The association of cyberbullied with Other sociodemographic factors like Age, gender, grade, and parent's education was not significant.

Association between reporting the event and gender was not significant ($P < 0.859$) [Table 4]. A strong and significant association was reported with worsening social relationships (teachers and parents) and being cyberbullied ($P < 0.001$). Additionally, individuals who felt they were neglected by their parents were observed to have a greater likelihood of being cyberbullied ($P < 0.001$). Association between personality type (agreeableness and emotional instability) and being cyberbullied was significantly associated ($P < 0.016$). Association between academic performance and being cyberbullied was not significantly associated ($P < 0.978$). Association between screen time being monitored by parents and being cyberbullied is not significantly associated ($P < 0.192$). A significantly associated and directly proportional association was found to be between time spent on social media and being cyberbullied ($P < 0.001$).

Association between depression and being a victim was significantly associated ($P < 0.001$) [Table 5]. 77% of victims suffer from depression and majority of them have severe depression. Association of the severity of depression and increased frequency of being a victim was also significantly associated ($P < 0.003$). The Association between cyberbullying and anxiety was statistically significant and directly proportional to the severity of anxiety ($P < 0.001$). About 42% of victim faces anxiety and 25% of them have severe anxiety.

Discussion

Awareness of cyberbullying was high among participants. About one-fifth of participants faced cyberbullying and less than half of them reported the event. Association of being a victim does not relate to their Age, gender, grade, or parent's education but relate to their Nationality and being younger siblings. Association between event reporting and gender was not significant. Association between worsening social relationships (teachers and parents), feeling neglected, personality type (agreeableness and emotional instability) and being a victim was statistically significant. Association of depression and anxiety with being a victim was statistically significant and directly proportional to the severity.

Awareness of cyberbullying was high among participants. Abaido^[13] also reported 91%. Among the participants, half learned about cyberbullying from their school, while one-third learned through the internet and friends, parents playing a minor role. Schools have played their part in raising awareness, but a major part of a child's understanding comes from the parents. It is the responsibility of parents to teach their children about such issues and how to be safe in an online environment, but unfortunately, the majority of them failed to do so.

Table 2: Characteristics of the cyberbully perpetrators described by the victims

Variable	Subcategories	Cyberbullies		Total
		Number	%	
Gender	Male	32	48.5	66
	Female	23	34.8	
	Both	11	16.7	
Academic level	Below average	25	44.6	56
	average	21	37.5	
	Above average	10	17.9	
Social relations	Below average	27	50	54
	average	12	22.2	
	Above average	15	27.8	
Grade	Junior	3	5.3	56
	Batchmate	38	67.9	
	Senior	15	26.8	
Personality	Conscientiousness	5	10.6	47
	Openness	3	6.4	
	Agreeableness	1	2.1	
	Extraversion	16	34	
	Emotional instability	22	46.8	

About one-fifth of participants faced cyberbullying. Our results are consistent with the finding of Kazarian and Ammar^[14] Slightly lesser prevalence reported by Alomosh *et al.*, AlQaderi *et al.*, and Al-Darmaki *et al.*^[6,9,15] Two separate studies conducted in Saudi Arabia indicated the prevalence as 31.5% and 29.6%.^[9] Barragán Martín *et al.*^[5] also reported a range between 20-40% among adolescents. It is important to note that approximately nine percent of victims reported being bullied every week or more, which is highly alarming. Negative experiences on such a frequent basis are harmful to anyone and can interfere with their daily activities, especially when they involve children, who are at such a vulnerable age. With the increase of digitalization, it's expected to increase.^[1]

About less than half of victims reported the event. Abaido^[16] found it to be 37%. The common response to cyberbullying includes ignoring and not telling family or teachers.^[2] The social and cultural constraints among youth in Arab may cause less reporting or silence towards cyberbullying due to feared getting into trouble.^[16] Parents or friends were preferred for reporting compared to Authorities in our study. Abaido^[16] found only 8.2% report to the police or authority and the majority prefer family members or friends. This is a cause of concern, initiatives should be taken to encourage children to inform their parents or the authorities about these events so that proper action can be taken. Our study found perpetrators were known to victims in 61% of cases. Alomosh *et al.*^[6] also found it to be 78.4%. Known perpetrators were easy to identify and proper action can be taken in time. Majority of cyberbullying stopped after reporting in our study. This should be used as an encouragement for the victims that hesitate to report such events. While this percentage is significant, there is still room for improvement, since ideally none of the reported cases should continue facing these situations.

Table 3: Association between sociodemography and being a cyberbully victim

Variable	Subcategory	Cyberbullied				Total	P/Chi-square/ degree of freedom
		Yes		No			
		Number	%	Number	%		
Age	13-16	37	21.4	136	78.6	173	0.736, $\chi^2=0.113$, df 1
	17-20	63	22.7	214	77.3	277	
Gender	Male	36	24.5	111	75.5	147	0.420, $\chi^2=0.649$, 1
	Female	64	21.1	239	78.9	303	
Grade	9-10	44	27.2	118	72.8	162	0.059, $\chi^2=3.571$, 1
	11-12	56	19.4	232	80.6	288	
Nationality	Eastern Mediterranean	20	38.5	32	61.5	52	<0.001
	Southeast Asian	66	17.8	304	82.2	370	
	Others	14	50	14	50	28	
Father's education	Secondary education or less	11	20	44	80	55	0.218, $\chi^2=3.05$, 2
	College/Higher diploma/UG	47	27.2	126	72.8	173	
	PG	36	19.8	146	80.2	182	
Mother's education	Secondary education or less	17	22.1	60	77.9	77	0.503, $\chi^2=1.374$, 2
	College/Higher diploma/UG	44	25.9	126	74.1	170	
	PG	32	20.5	124	79.5	156	
Order of sibling	Oldest	26	15.2	145	84.8	171	0.027
	Middle	21	28	54	72	75	
	Youngest	35	25.5	102	74.5	137	

Table 4: Association between variable and being a cyberbully Victim

Variable	Subcategory	Cyberbullied				Total	P/Chi-square/ degree of freedom
		Yes		No			
		Number	%	Number	%		
Event Reporting	Male	13	39.4	20	60.4	33	0.859, $\chi^2=0.032$, 1
	Female	26	41.3	37	58.7	63	
Relationship with parents	Good to excellent	56	17.7	261	82.3	317	<0.001
	Average	30	28.6	75	71.4	105	
	Bad	14	50	14	50	28	
Perceived neglect by parents	Yes	29	46	34	54	63	<0.001
	No	58	17.8	268	82.2	326	
Relationship with teacher	Good to excellent	38	15.1	214	84.9	252	<0.001
	Average	47	28.7	117	71.3	164	
	Bad	15	44.1	19	55.9	34	
Amount of time spent on social media	<1 h	7	12.3	50	87.7	57	<0.001
	1-2 h	25	16.7	125	83.3	150	
	3-4 h	36	28.1	92	71.9	128	
	>5 h	29	40.3	43	59.7	72	
Personality	Conscientiousness	17	15.3	94	84.7	111	0.016
	Openness	14	20.6	54	79.4	68	
	Extraversion	19	24.4	59	75.6	78	
	Agreeableness	32	35.2	59	64.8	91	
	Emotional Instable	9	32.1	19	67.9	28	
Academic performance	Below average and average	20	22.2	70	77.8	90	0.978, $\chi^2=0.001$, df 1
	Above average and good	74	22.4	257	77.6	331	
Screen time	Parent monitoring	47	20.3	184	79.7	231	0.326, $\chi^2=0.966$, 1
	Unmonitored	53	24.2	166	75.8	219	

Table 5: Association between depression and anxiety with being a cyberbully victim

Variable	Subcategory	Depression						Total	P
		None		Mild to moderate		Severe			
		Number	%	Number	%	Number	%		
Cyberbullied	Yes	23	23	9	9	68	68	100	<0.001
	No	159	45.4	66	18.9	125	35.7	350	
Frequency of being victimized	Once or twice a year	22	37.3	6	10.2	31	52.5	59	0.003
	Two to three times a month	0	0	1	5.3	18	94.7	19	
	Once a week	0	0	1	10	9	90	10	
	Several times a week	0	0	1	12.5	7	87.5	8	
Cyberbullied	Yes	58	58	17	17	25	25	100	<0.001
	No	247	70.6	69	19.7	34	9.7	350	

Most perpetrators were males, had below-average academic performance and social relations, were from same batch, and had emotionally unstable personalities. Though male were more compared to female but both do not lose chance to bully someone, as a study revealed that adolescents who cyberbullies are inclined to do so to impress their peers and gain a greater social standing.^[9] About 44.6% of bullies were below average in academic performance and 50% had below-average social relations. Perpetrators were also more likely to be the victim's batchmates. According to the victims, 46.8% of bullies displayed a neurotic (emotional instability) personality, although the victim may have a bias against their respective bullies. Several studies that identified the characteristics of the perpetrators observed that bullies

were more likely to be angry, frustrated, sad, and emotionally unstable.^[17-19] These attributes can further cause a bully to manifest internalized problems as they might fail to achieve the social power they desire.^[9]

Association of being victim does not statistically relate to their Age, gender, grade, or parent's education. Participants of all age groups experienced similar rates of cyberbullying and therefore age was statistically insignificant. Although contrary to our result some studies found young age group more bullied.^[6] In the current study, boys were more likely to become victims than girls, but no statistically significant association between gender and victimization was found. Zhou *et al.* also reported the involvement of boys more than girls but Ngo *et al.* found

vice-versa.^[2,20] Others found both genders could be subject to cyberbullying.^[16] We also agree that both genders have an equal chance of being cyberbullied. All grades in our study are equally exposed to cyberbullying. A parent's education level is a unique factor that shapes the behavior of children.^[19] However, in the current study, neither mother's nor father's education level had a statistically significant association with being cyberbullied. Educated families can easily identify and act as a protective factor from cyberbullying.^[19] Nationality was found to be a statistically significant factor of cyberbullying in our study. Though the results are significant, it is important to contextualize them and apply them to the diversity of the school setting, since most of the respondents came from schools in which Southeast Asians dominated. However, Park *et al.*^[21] reported that a sociocultural difference in perceptions of what constitutes bullying, and self-construal amongst Asians may serve as a protective factor for cyberbullying. The order of siblings was found to have a strong association with being cyberbullied in the current study. The younger siblings are prone to cyberbullying. However, the results of this study were in contrast with the results by Bruhn,^[22] who found no significant difference between the order of siblings.

Association between event reporting and gender was not statistically significant. Park *et al.*^[21] identified that females were much more likely to report the incident compared to males. Although there was a higher percentage of females among the victims who reported the event in our study but it was not statistically significant. Relationship with parents was found to be one of the most significant predictors of cybervictimization. Participants with bad and average relationships with their parents were more prone to be cyberbullied.^[19,20] Perceived neglect from one or both parents was also strongly associated with being cyberbullied in our study. Neglect from a parent would likely stem from having a bad relationship with the parent initially and students who regularly communicated with their parents were less likely to be cyberbullied.^[2,19,23] Relationship with teachers was also found to be strongly associated with cyberbullying in the present study. Other Study also reported a close relationship with teachers being a protective factor.^[20,24] Many studies have argued that the academic performance of student affects whether they would be cyberbullied or not.^[25] Park *et al.*^[21] found those adolescents with lower academic achievement might get victimized because they lack social status. However, in this study, no association was established between academics and being cyberbullied. A significant relationship between the amount of time spend on internet and the risk of being cyberbullied was observed in this study. The risk of cyberbullying was observed to increase with the amount of time spent on social media. This is in agreement with the studies that reported an increase in victimization rates with increased screen time.^[18,20,26] Many parents monitor their children's social media and control what they are allowed to do online, in the hopes that it will protect them from harm.^[27] However, the current study showed that screen time monitoring was not associated with cyberbullying. An approach based on trust and good communication instead of one built on authority may be more appropriate for this situation.^[22] A strong association

between different personality types (agreeableness and emotional instability) and being cyberbullied was observed in this study. Different studies have reported contrary findings with being agreeableness or kind but most of them concluded that emotional instability personality is related with cybervictimization.

Association between depression and being victim was significant in our study. Nearly 3/4th of victims have depression, among which 2/3rd have severe depression. Association between the severity of depression and the increased frequency of being victim was also significant. The majority of victims who experienced bullying at least once a week were afflicted with severe depression. cyberbullying is a predictor of depressive symptoms, and repeated exposure to cyberbullying increases the risk of developing depressive symptoms.^[28] About less than half of victims suffer anxiety and one-fourth of them have severe anxiety in our study. several studies have documented stress, anxiety, and depression as significant psychological problems associated with cyberbullying victimization.^[29] AlQaderi *et al.*^[9] found Young Adults using digital devices among Arabs have statistically significantly higher levels of anxiety and depression compared to non-Arab. Cyberbullying been linked with significant negative outcomes such as anxiety, and depression.^[16] Most studies are in agreement with our study that anxiety and depression are experienced by almost every cyber victim.^[9,16,28] Cyberbullying has been linked with low self-esteem, suicidal ideation, anger, frustration, and a variety of other emotional and psychological problems.^[16] Support from family and friends plays an important role in preventing victims from the mental consequences of cyberbullying.^[2] It is documented that a lesser number of students felt anxiety and lower levels of depressive symptoms if they had family support.^[2]

Limitations

The findings need to be interpreted with caution as data obtained from two schools, the results cannot be generalized to the entire nation. No randomization was done, it was voluntary participation that may have affected the data. This study used information collected on a self-reported basis and is therefore prone to recall bias. The cross-sectional design is useful for identifying associations but cannot attribute causation; hence, further studies are needed to study any cause and effect relationship.

Conclusion

Our study suggested a high rate of awareness and a low rate of prevalence of cyberbullying among adolescents. A high risk of psychological problems among those experiencing cyberbullying was found. Initiatives should be taken to encourage children to inform their parents or the authorities about these events so that proper action can be taken. Moreover, social support (family and teachers) was an important protective source and helped mediate the relationship between cyberbullying and psychological problems.

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Conflicts of interest

There are no conflicts of interest.

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