

Cybervictimization among preadolescents in a community-based sample in Canada: Prevalence and predictors

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ABSTRACT

OBJECTIVES: To examine the prevalence and predictors associated with cybervictimization among preadolescents in a community-based sample from Canada.

METHODS: Data were drawn from a cohort of 5783 students of grades 5–8, aged 9–14 from 109 elementary schools at the Saskatoon Health Region, Saskatchewan of Canada based on the Student Health Survey in the year of 2010–2011. Multivariate logistic regression with the generalized estimating equation was used to determine the individual and contextual factors associated with self-reported cybervictimization.

RESULTS: Of the 5783 school children, 5611 (97.0%) responded to the question regarding cybervictimization. Among those respondents, 572 (10.2%) reported being cyberbullied at least once in the past four weeks. The students most likely to be victimized by cyberbullying were girls, students in grades 7 and 8 compared with grade 5, Aboriginal students compared to non-Aboriginal students, those who had lived part of their life outside of Canada compared with those who lived all of their life in Canada, those who reported drinking alcohol in the past, those who reported very elevated depressive symptoms, those who were traditionally bullied, those who had low self-esteem, and those who had a poor relationship with their parents. School-level variation in cyberbullying victimization is negligible. School neighbour-level deprivation is not significant after adjusting for individual-level characteristics and parent–child relationship.

CONCLUSION: Our findings identified important characteristics of preadolescents with higher susceptibility to cybervictimization in a Canadian setting, which can be used to develop intervention strategies for mitigating cybervictimization among the study population.

KEY WORDS: Cyberbullying victimization; ecological systems theory; psychological factors; traditional bullying

La traduction du résumé se trouve à la fin de l'article.

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Cyberbullying is a new recent form of bullying or harassment using electronic means to aggressively and intentionally harm someone repeatedly and over time, where a power imbalance exists between cyberbullies and the victims.^{1,2} With computers and mobile phones now a part of everyday life for youths, there are a multitude of ways for students to engage in cyberbullying, including the use of email, blogs, websites, chat rooms, mobile phones, instant messaging, web-pages, text messages, and online games. Through these media, harmful messages can reach large audiences in a short span of time. Youths who are cyberbullied are more likely to experience psychiatric problems, substance use, offline victimization, delinquency and aggression.^{3,4} In Canada, cyberbullying recently became a priority on the policy agenda following the suicides of two teenagers.⁵ These highly publicized cases of cyberbullying have attracted extensive media attention both nationally and globally.

Given these serious consequences for cybervictimization of youths, understanding the etiology of cybervictimization by identifying its important predictors is essential to help schools develop prevention and intervention strategies for reducing cyberbullying and victimization. Children are typically enmeshed in families and schools, which are situated in neighbourhoods. The ecological systems theory contends that a community's contextual environment influences an individual's risk for involvement in deviant or aggressive behaviours.⁶ Understanding the factors that

predict bullying behaviour in school therefore requires a close examination of the complex inter-relationships between individual and environment. Under the ecological system theory, the multi-level contexts include individual characteristics (i.e., socio-demographic characteristics, behaviour and mental health variables), microsystem (interpersonal relationships of individuals within immediate settings, i.e., parent–youth relationship or peer relationships), mesosystem (interconnections between the microsystems, i.e., interactions between the family and teachers), exosystem (indirect environment, which does not contain the child, but affects the setting in which the child lives, i.e., school and community characteristics), macrosystem (cultural norms and beliefs, religious affiliation), and chronosystem factors (change in family structure).⁶

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In our study, we particularly focus on the predictors for cybervictimization at the individual, microsystem and ecosystem levels, given the availability of the information collected in the current study (see Figure 1). Of the individual-level characteristics, female adolescents are more likely to be victims of malicious rumours, whereas male adolescents are more likely to be victims of direct threats. However, gender differences remain inconsistent across studies, depending on the definition of cyberbullying and the age of the groups studied.^{7,8} Cybervictimization also peaks in late middle school to early high school, then stabilizes or declines, following the same trajectory as offline verbal and relational bullying.⁷ Students belonging to minority ethnicity groups are more likely to be cybervictimized.⁴ However, much of the current literature on cyberbullying has been conducted with participants from homogenous ethnicity,⁹ so racial/ethnic differences in cybervictimization prevalence remain largely unknown. Extant empirical studies on cyberbullying have also documented that students with mental health problems, such as depression, anxiety and lower self-esteem, are also strongly associated with cybervictimization.⁴ Victims of cyberbullying in adolescence are also more likely to have participated in risky behaviours of smoking and drinking¹⁰ and are more susceptible to traditional bullying.¹¹ A microsystem is the most immediate environment in which the child lives, involving interactions with parents, peers and teachers.¹² Studies have revealed that poor parent-child relationships are strongly associated with cybervictimization.¹³ The roles of peers in socialization can also be substantial during preadolescence. Research has found that victims of bullying have fewer friends in comparison to bullies and uninvolved youths.¹⁴

Previous research on determinants of bullying victimization primarily focused on individual characteristics of children and on the influence of parenting styles. In ecological systems theory, exosystem contextual factors, including school and community characteristics, could also potentially be influential as predictors

of child victimization and bullying. Previous studies have found that school and community socio-economic status and poverty levels are associated with increased risk of student victimization;¹⁵ however, some research finds no associations.¹⁶ Mixed findings regarding contextual factors may be due to different study populations. Most of the research on studying the role of contextual factors, including school and community environments, have focused on traditional bullying victimization. However, research in this domain remains sparse for cybervictimization among preadolescents.

Examination of cybervictimization before children transit to adolescence is warranted for an early identification and intervention given the rise in popularity of electronic devices in both schools and homes.⁵ As Canada looks to take a holistic approach in producing a national anti-bullying strategy, their efforts will benefit from understanding the risk and predictive factors for cybervictimization among preadolescents. The objectives of the current study are therefore to examine the individual and school contextual factors in association with cybervictimization and identify the characteristics of preadolescents with higher susceptibility to cybervictimization in a Canadian setting.

METHODS

Survey

The survey data utilized in the current study were based on the Student Health Survey (SHS), which is a cross-sectional survey that was administered to the elementary school students attending grades 5–8 from the Saskatoon Health Region, Saskatchewan, Canada. Data collection occurred in winter/spring of 2011 among the students who were enrolled in the 2010/2011 academic year.¹⁷ The surveys were administered to students during class time within 109 elementary schools from the following four school divisions: Saskatoon Public School Division, Greater Saskatoon Catholic School Division, Horizon School Division, and Prairie Spirit School Division.¹⁷ The survey primarily focused on demographics, socio-economic status, physical activity, relationships with parents and peers, bullying victimization, and mental health. The bullying survey was developed by the Canadian Public Health Association and based on a survey used by the World Health Organization.¹¹ Informed consent was acquired from the respective school divisions, school principals, and parents before the survey was distributed. The Behavioural Research Ethics Board at the University of Saskatchewan approved the ethics. Research assistants from the Saskatoon Health Region obtained consent from the students during class time, subsequently facilitating the distribution of surveys to those willing to participate. Upon completion, all filled-out surveys were enclosed in an envelope and returned to the research assistant for subsequent dissemination to the research team. There were 12 391 students registered in grades 5–8 and the overall response rate was 46.7% ($n = 5783$).

Variables

The outcome variable, self-reported cybervictimization, was assessed using the question, “In the past four weeks, how often have you been bullied by other students electronically through the Internet, e-mail, phone or cellular phone text messages to threaten

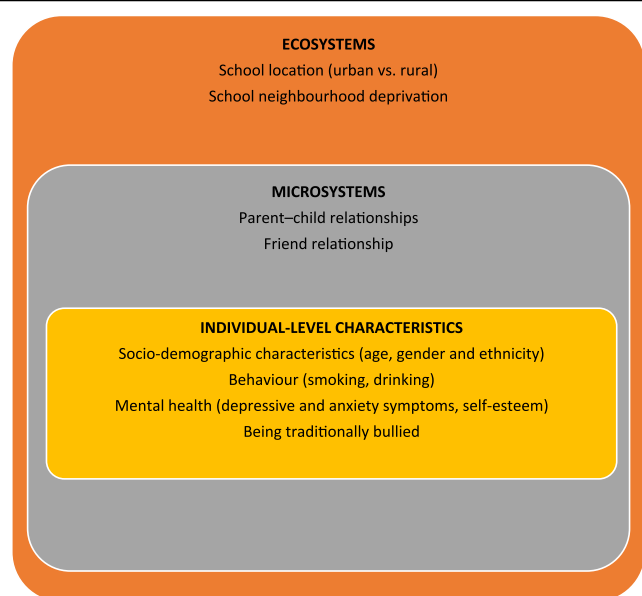


Figure 1. An ecological model of predictors of preadolescents cybervictimization

you or make you look bad?" There are four potential responses: never in 4 weeks, once or twice in 4 weeks, every week, or many times a week. The literature recommended to count a single incident as an experience of cyberbullying, due to low frequency of cybervictimization when a short time of reference is used.¹⁸ Therefore, the response variable was collapsed into a binary outcome of having experienced cyberbullying versus never during the past four weeks.

Individual-level factors include socio-demographic variables (gender, grade, ethnicity, and living part of one's life outside Canada), behaviour variables (smoking and drinking behaviours) and psychological variables (depressive, anxiety and self-esteem). Depressive symptoms level was measured according to the 12-item shortened version of the Centre of Epidemiological Studies Depression scale (CES-D).¹⁹ Students with scores of 0–11 were considered as having minimal depressive symptoms, 12–20 somewhat elevated, and ≥ 21 very elevated. Anxiety level was measured using a seven-item scale.¹⁷ Students with scores of 0–7 were considered as having low anxiety levels, 8–14 moderate and ≥ 15 high. Self-esteem was determined using a five-item scale with total score range of 0–20. Students with scores of 0–6 were considered as having low self-esteem, 7–13 moderate, and ≥ 14 high.¹⁷ Traditional bullying victimization was also considered as a risk factor for cyberbullying, which was derived as a dichotomized variable according to if a student had been physically (i.e., hitting, pinching, kicking), verbally (i.e., spreading rumours, gossiping, insulting, teasing) or socially (i.e., isolating and excluding other from the group) bullied at least once in the past 4 weeks. *Microsystem* factors include the quality of relationships with parents and friends respectively, which were categorized into poor, moderate, and good relationship.¹⁷ *Exosystem* factors (i.e., school-level contextual factors) include school location (urban vs. rural) and school neighbourhood deprivation. In our study, school neighbourhood deprivation is considered as total deprivation including both material and social deprivation. Material deprivation is measured with reference to education, employment and income, while social deprivation is associated with single parenting, marital status and living alone.²⁰

Analysis

All analyses were completed using SAS 9.3 (SAS Institute, Cary, NC, USA). Generalized estimating equation (GEE) logistic regression models with exchangeable working correlation structure were implemented to account for the intra-cluster correlation among the students attending the same school. To screen the covariates, variables with p -value < 0.20 in the bivariable analysis were retained for consideration in building the final logistic regression model. Manual backward selection was then used to obtain the main effects model, retaining significant predictors with p -value < 0.05 . Last, two-way interactions between the significant predictors in the final model were checked. The associations between the risk factors and cybervictimization in the final model were reported as adjusted odds ratios (AOR) with 95% confidence intervals (95% CI) and associated p -values.

RESULTS

Among the 5611 students who responded to the question regarding cybervictimization, 572 (10.2%) reported being cyberbullied at least

once in the past four weeks. The frequencies of all the predictors are presented in Table 1. In the bivariate analysis, all predictors are significantly associated with cybervictimization, except for school location (urban vs. rural) (Table 2).

In the final multivariable model (Table 3), the working correlation coefficient is estimated as 0.004, which indicated very small variation was attributed to school after accounting for individual-level risk factors. The factors identified to be associated with self-reported cybervictimization include: girls (AOR = 1.41);

Table 1. Frequency distribution of the variables

Predictor variables	<i>n</i> (%)
Individual-level predictor	
<i>Socio-demographic</i>	
Gender (<i>n</i> = 5582)	
Male	2637 (47.2)
Female	2945 (52.8)
Grade (<i>n</i> = 5570)	
5	1407 (25.3)
6	1496 (26.9)
7	1389 (24.9)
8	1278 (22.9)
Aboriginal (<i>n</i> = 5371)	
Non-Aboriginal	4804 (89.4)
Aboriginal	567 (10.6)
Living part of their life outside Canada (<i>n</i> = 5550)	
No	4497 (90.0)
Yes	553 (10.0)
<i>Social behaviour</i>	
Smoking behaviour (<i>n</i> = 5559)	
Never	5434 (97.7)
Tried smoking at least once in their life	125 (2.3)
Drinking behaviour (<i>n</i> = 5611)	
Non-drinker	4492 (80.1)
Drinker	1119 (19.9)
<i>Mental health</i>	
Anxiety (<i>n</i> = 5045)	
Low	2040 (40.4)
Moderate	1815 (36.0)
High	1190 (23.6)
Self-esteem (<i>n</i> = 5484)	
Low	1176 (21.4)
Moderate	3228 (58.9)
High	1080 (19.7)
Depressive symptoms (<i>n</i> = 5100)	
Minimal	4245 (83.2)
Somewhat elevated	725 (14.2)
Very elevated	130 (2.6)
<i>Other bullying victimization experiences</i>	
Traditional bullying victimization (<i>n</i> = 5600)	
No	2822 (50.4)
Yes	2778 (49.6)
Microsystems factors	
<i>Social relation</i>	
Parent relationship (<i>n</i> = 4902)	
Poor	1173 (23.9)
Moderate	2699 (55.1)
Excellent	1030 (21.0)
Friend relationship (<i>n</i> = 4426)	
Poor	1121 (25.3)
Moderate	1785 (40.3)
Excellent	1520 (34.3)
Ecosystems factors	
<i>School-level predictor</i>	
School type (<i>n</i> = 5611)	
Urban	4181 (74.5)
Rural	1430 (25.5)
<i>Neighbourhood-level predictor</i>	
Deprivation index (<i>n</i> = 5038)	
1 (Most affluent)	1190 (23.6)
2	854 (17.0)
3	572 (11.4)
4	527 (10.5)
5 (Least affluent)	465 (9.2)
Rural	1430 (28.4)

Table 2. Bivariate logistic GEE regression for the personal and environmental factors predicting cybervictimization

Predictor variables	Cybervictimization		p-value
	Yes (%)	No (%)	
Individual-level characteristics			
<i>Socio-demographic</i>			
Gender (n = 5582)			
Male	212 (8.0)	2425 (92.0)	<0.001
Female	357 (12.1)	2588 (87.9)	
Grade (n = 5570)			
5	107 (7.6)	1300 (92.4)	<0.001
6	133 (8.9)	1363 (91.1)	
7	160 (11.5)	1229 (88.5)	
8	168 (13.2)	1110 (86.9)	
Aboriginal (n = 5371)			
Non-Aboriginal	450 (9.4)	4354 (90.6)	<0.001
Aboriginal	92 (16.2)	475 (83.8)	
Living part of their life outside of Canada (n = 5550)			
No	499 (10.0)	4498 (90.0)	0.066
Yes	68 (12.3)	485 (87.7)	
<i>Social behaviour</i>			
Smoking (n = 5559)			
Never	530 (9.8)	4904 (90.2)	<0.001
Tried smoking at least once in their life	36 (28.8)	89 (71.2)	
Drinking (n = 5611)			
Non-drinker	385 (8.6)	4107 (91.4)	<0.001
Drinker	187 (83.3)	932 (16.7)	
<i>Mental health</i>			
Anxiety (n = 5045)			
Low	104 (5.1)	1936 (94.9)	<0.001
Moderate	161 (8.9)	1654 (91.1)	
High	229 (19.2)	961 (80.8)	
Self-esteem (n = 5484)			
Low	243 (20.7)	933 (79.3)	<0.001
Moderate	260 (8.1)	2968 (91.9)	
High	51 (4.7)	1029 (95.3)	
Depressive symptoms (n = 5100)			
Minimal	332 (7.8)	3913 (92.2)	<0.001
Somewhat elevated	153 (21.1)	572 (78.9)	
Very elevated	43 (33.1)	87 (66.9)	
<i>Other bullying victimization experiences</i>			
Traditional bullying victimization (n = 5600)			
No	45 (1.6)	2777 (98.4)	–
Yes	525 (18.9)	2253 (81.1)	
Microsystems factors			
<i>Social relation</i>			
Parent relationship (n = 4902)			
Poor	236 (20.1)	937 (79.9)	<0.001
Moderate	234 (8.7)	2465 (91.3)	
Excellent	33 (3.2)	997 (96.8)	
Friend relationship (n = 4426)			
Poor	200 (17.8)	921 (82.2)	<0.001
Moderate	157 (8.8)	1628 (91.2)	
Excellent	85 (5.6)	1435 (94.4)	
Ecosystems factors			
<i>School-level predictor</i>			
School type (n = 5611)			
Urban	422 (10.1)	3759 (89.9)	0.93
Rural	150 (10.5)	1280 (89.5)	
<i>Neighbourhood-level predictor</i>			
Deprivation index (n = 5038)			
1 (most affluent)	88 (7.4)	1102 (92.6)	0.014
2	75 (8.8)	779 (91.2)	
3	61 (10.7)	551 (89.3)	
4	64 (12.1)	463 (10.2)	
5 (least affluent)	68 (14.6)	397 (8.8)	
Rural	150 (10.5)	1280 (89.5)	

students in grade 7 (AOR = 1.61) and in grade 8 (AOR = 1.66) compared to those in grade 5; Aboriginal students compared to non-Aboriginal students (AOR = 1.68); those who had lived part of their life outside of Canada compared with those who lived all of their life in Canada (AOR = 1.48); those who had past experiences with alcohol or were currently a drinker compared to those who had never consumed alcohol (AOR = 1.63); those who had very elevated compared to those reporting minimal depressive

symptoms (AOR = 1.75); and being a victim of traditional forms of bullying (AOR = 10.73). Students who reported having moderate self-esteem compared to those with a lower self-esteem (AOR = 0.76) and students who considered themselves to have an excellent (AOR = 0.40) or moderate (AOR = 0.72) relationship with their parents versus having a poor relationship were protective factors against electronic bullying victimization. The influence of neighbourhood deprivation level on bullying

Table 3. Multivariable logistic GEE regression to assess the risk factors associated with cybervictimization in grades 5–8 school children ($n = 4298$)

Predictor variables	AOR	95% CI	p-value
Individual-level characteristics			
<i>Socio-demographic</i>			
Gender			
Male (reference)	–	–	–
Female	1.41	1.13–1.77	0.002
Grade			
5 (reference)	–	–	–
6	1.26	0.89–1.80	0.192
7	1.61	1.14–2.27	0.007
8	1.66	1.19–2.31	0.003
Ethnicity			
Non-Aboriginal (reference)	–	–	–
Aboriginal	1.68	1.22–2.32	0.002
Living part of their life outside Canada			
No (reference)	–	–	–
Yes	1.48	1.01–2.16	0.045
<i>Social behaviour</i>			
Drinking behaviour			
Non-drinker (reference)	–	–	–
Drinker	1.63	1.27–2.11	<0.001
<i>Mental health</i>			
Self-esteem			
Low (reference)	–	–	–
Moderate	0.76	0.60–0.96	0.022
High	0.74	0.45–1.20	0.217
Depressive symptoms			
Minimal (reference)	–	–	–
Somewhat elevated	1.30	0.98–1.72	0.072
Very elevated	1.75	1.03–2.96	0.038
<i>Traditional bullying victimization</i>			
No (reference)	–	–	–
Yes	10.73	7.59–15.17	<0.001
Microsystems factors			
<i>Parent relationship</i>			
Poor (reference)	–	–	–
Moderate	0.72	0.55–0.96	0.026
Excellent	0.40	0.24–0.65	<0.001

attenuated to statistical non-significance, while controlling for individual-level risk factors. We also tested the interactions for the variables that remained in the main effects models and none were significant and therefore are not presented.

DISCUSSION

There is increasing public awareness of cyberbullying during adolescence, and greater public pressure in Canada for the government to address this issue. In the current study, we found that approximately 10% of elementary students were victims of cyberbullying. We speculate this prevalence might be underestimated due to children's tendency to hide cyberbullying from adults. For example, a survey of Canadian students from grades 7 to 12 found that more than 40% had been bullied but would not tell anyone, while only 1 in 10 would inform an adult.²¹ Variations among studies in the prevalence of cybervictimization may be attributable to variability in the categories of cyberbullying included in the definition and methods of data collection.

The main strength of this study is its examination of the individual and school contextual factors associated with cybervictimization for preadolescents before they transition to adolescence. Another strength is the use of community-based data containing rich information on a broad spectrum of risk factors to be explored. Such data are rarely reported in the preadolescent

literature. In our analysis, we found self-reporting being victims of cyberbullying appeared across all grades, ranging from 7.6% for grade 5 students to 13.2% for grade 8 students (Table 1). We attribute seeing this effect in these grades as reflective of the recent trend of more youths on the Internet and owning a cell phone or other communication devices. We also found that girls were more likely to be electronically bullied than boys, which is also consistent in the general direction of prior research.²² This suggests an important direction for future research: to examine the gender effect of cybervictimization with relation to the differences in behaviours of boys and girls regarding how they interact online.

There remains a paucity of research specifically examining the experiences of cybervictimization among minority groups in preadolescence. This study sought to address this gap by identifying the associations between minority groups and the likelihood of being a victim of cyberbullying. We found that Aboriginal students are at a higher risk of being cyberbullied compared to non-Aboriginal students. This phenomenon may be attributable to power differentials across social groups with roots in intergenerational trauma and the after-effects of colonialism.²³ It is possible other ethnic minority groups may experience different levels of cybervictimization; however, the answer choices for ethnicity variable are limited to Aboriginal vs. non-Aboriginal in the SHS questionnaire, and therefore, we were unable to examine other ethnic differences on cybervictimization. Nevertheless, we found that those who had lived part of their life outside of Canada were more likely to be cyberbullied compared to those who lived in Canada all of their life. We speculate that the majority of those who lived part of their life outside of Canada are newcomers. Newcomers typically face many difficulties, including loss of family and friends, discrimination, difficulty in speaking English, poor home-school relationships, and living in a poor neighbourhood, which may lead to considerable social disadvantage in this vulnerable population. These findings add to the literature about the possible difficulties faced and cultural barriers during the transition from preadolescence to adolescence among children from Aboriginal communities and newcomers to Canada. Consistent with previous research,¹⁰ we have identified significant association between drinking and cybervictimization. However, smoking was not significant in the adjusted model. In comparison, a study of students in grades 7–12 from Ontario, Canada demonstrated a positive association between both drinking and smoking behaviours and self-reported cybervictimization.²⁴ In our study, only 2.3% of students reported smoking, which can be a characteristic of the relatively younger school children population, who might be less likely to be exposed to smoking as compared to older youths.

Our study found that children with severe depressive symptoms are at an increased risk of being cyberbullied, whereas anxiety is not significantly associated with cybervictimization. Research revealed that children who exhibit anxiety and depression may send signals to their peers that they are easy targets and will not retaliate against aggression.²⁵ More studies are needed to understand the differential psychosocial effects on experiencing cyberbullying. Our study also affirmed the relationship between being susceptible to cybervictimization and lower self-esteem. Students with a lower self-esteem are typically less sociable and

tend to be members of smaller social networks. Interventions to incorporate social skills training to build their confidence and effectiveness in social interactions with their peers may mitigate their risk of being cyberbullied.²⁶

Further group comparisons revealed that students who were traditionally bullied were more likely to also be bullied electronically. This finding is consistent with previous research, which shows that there is often overlap between traditional bullying and cyberbullying, with a number of youths engaging in both forms simultaneously.²⁷ However, despite finding a strong relationship, it is important to recognize that the two behaviours are distinct from each other in critical ways to effectively address the different elements of the two behaviours. For instance, a study based on an earlier version of the SHS revealed that boys were more likely to be victims of traditional bullying,¹¹ whereas we found that girls were more likely to be victims of cyberbullying. There are several possible explanations for these discrepancies. First, as the literature showed, young boys tend to be involved in more overt physical violence.¹¹ Second, cyber-space allows perpetrators to be aggressive, especially against girls, without engaging in direct physical behaviour.²⁸ Moreover, notably, traditional bullying tends to occur more frequently at school during the day, whereas cyberbullying can occur at any time.²⁹

In our study, having a positive parental relationship was identified as a protective factor against cybervictimization. Research has shown that bullies tend to come from families without adequate adult supervision and lacking in affection, whereas victims tend to come from families with high conflict.³⁰ Our findings suggest the need for parents to develop a stronger connection with their children to help ensure the children's safety when online. Meanwhile, nurturing independence is also crucial to encourage children to stand up for their own principles and values. The influence of peer relationship on cybervictimization attenuated to statistical non-significance once adjusted for other individual-level risk factors, which indicates that parental relationship plays a more important role for preadolescents than peer relationship.

Last, variation in cybervictimization among schools was negligible after accounting for individual-level characteristics. Also, the difference in cybervictimization is non-significant for urban vs. rural schools. The association of school area-level deprivation and cybervictimization disappeared once we had adjusted for individual-level characteristics. One possible explanation for these findings is that schools are not the only places cyberbullying could occur. Social media and cell phones could be accessed anywhere, which allows for cyberbullying to go beyond the school environment.⁵

Limitations

While this study had a relatively large sample size for school-based research, it had some limitations. First, causal relationships could not be assessed for the cross-sectional study. For example, the relationships between cybervictimization and risky behaviours can be bidirectional. Further longitudinal studies should be performed to verify the causal relationships. Second, selection bias remains a possibility. The non-respondents may differ from the respondents. For example, students being cyberbullied may be more likely to respond to the questionnaire given their interests in this research

topic. On the other hand, those students being cyberbullied who have psychological problems may be less likely to respond, to avoid disclosing sensitive information. Third, the data of this study were collected based on children's recall on past events, so recall bias was difficult to avoid. Under-reporting of cybervictimization may lead to an underestimation of the strength of associations between these factors and cybervictimization, and over-reporting of positive behaviours may result in over-estimation of the relationship of these factors with cybervictimization. It would be useful to further examine the relationships found in this study on bullying using parental report. However, parents may be more likely to give socially desirable answers compared with their children, and children may be reluctant to communicate to their parents their cyberbullying victimizations; therefore, it is possible that the bullying estimates are lower than what would be found with child self-report. Parents also may over-report positive and under-report negative parent-child relationship. Testing information from multiple sources is therefore recommended for future studies. Other factors, i.e., body mass index, parents' education, and family living arrangements, contain a large amount of missing values; these were therefore not included in the current study to avoid losing a great deal of data due to list-wise deletion and to maintain the statistical power. This may have some influence on the strength of the associations in the performed statistical analyses. Further, income inequality, i.e., parental income or residential neighbourhood-level deprivation level, may be associated with cybervictimization, but such information was not measured in the current questionnaire. Therefore, any generalization of the results of this study to different samples must be done with caution.

CONCLUSIONS

Our study demonstrated that cyberbullying is an emerging issue among preadolescents in the study population. Under the social-ecological framework, individual characteristics of the preadolescents predisposing them to cybervictimization include being: girls; students in grades 7 or 8 compared with grade 5; Aboriginal students compared to non-Aboriginal students; those who had lived part of their life outside of Canada compared with those who lived all of their life in Canada; those who reported drinking alcohol in the past; those who reported very elevated depressive symptoms; those who had low self-esteem; and those who were traditionally bullied. A microsystem factor identified to be significantly associated with cybervictimization is the parent-child relationship. Exosystem factors, i.e., school type and school neighbourhood deprivation, are not significantly associated with cybervictimizations. Further, school-level variation in cybervictimization is negligible. These findings could be useful for designing intervention strategies to mitigate the risk of cybervictimization for elementary school children.

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RÉSUMÉ

OBJECTIFS : Examiner la prévalence et les variables prédictives associées à la cybervictimisation chez les préadolescents dans un échantillon communautaire au Canada.

MÉTHODE : Les données provenaient d'une cohorte de 5 783 élèves de la 5^e à la 8^e année âgés de 9 à 14 ans et fréquentant 109 écoles primaires de la Région sanitaire de Saskatoon (en Saskatchewan, au Canada) d'après une enquête sur la santé des élèves (Student Health Survey) menée en 2010–2011. Une analyse de régression logistique multivariée avec équation d'estimation généralisée a servi à déterminer les facteurs individuels et contextuels associés à la cybervictimisation autodéclarée.

RÉSULTATS : Sur 5 783 enfants d'âge scolaire, 5 611 (97 %) ont répondu à la question sur la cybervictimisation. De ces répondants, 572 (10,2 %) ont déclaré avoir été victimes de cyberintimidation au moins une fois au cours des quatre semaines précédentes. Les élèves les plus susceptibles d'avoir été victimes de cyberintimidation étaient les filles, les élèves de 7^e et de 8^e année (par opposition aux élèves de 5^e année), les élèves autochtones (par opposition aux élèves non autochtones), les élèves ayant vécu une partie de leur vie hors du Canada (par opposition à ceux ayant vécu au Canada toute leur vie), les élèves ayant déclaré avoir bu de l'alcool par le passé, ceux ayant déclaré des symptômes dépressifs très élevés, ceux ayant été victimes de brimades classiques, ceux qui avaient une faible estime de soi, et ceux qui étaient en mauvais termes avec leurs parents. Les écarts d'une école à l'autre en matière de cyberintimidation étaient négligeables. La défavorisation des écoles selon le quartier n'était pas un facteur significatif après élimination des effets des caractéristiques individuelles et de la qualité de la relation parent-enfant.

CONCLUSION : Nos résultats ont mis en lumière d'importantes caractéristiques chez les préadolescents les plus susceptibles d'être victimes de cyberintimidation dans un milieu canadien; ils peuvent servir à élaborer des stratégies d'intervention pour atténuer la cybervictimisation dans la population étudiée.

MOTS CLÉS : cybervictimisation; théorie des systèmes écologiques; facteurs psychologiques; brimades classiques