

RESEARCH ARTICLE

The Impact of Lockdown in Cyberbullying in Primary Education: Transitions of Cyberbullying and Bullying

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ABSTRACT

BACKGROUND: The COVID-19 pandemic triggered a worldwide socio-sanitary crisis, continuing to impact societies worldwide. With many school systems shifted to online education, the current study presents a unique opportunity to investigate relevant phenomena related to serious health issues during the schooling and later in life, cyberbullying and bullying. This study began just before the COVID-19 lockdown was declared and resumed 5 months later allowing to explore 2 main objectives: first, to explore whether cyberbullying increased during the lockdown, and second, to analyze transitions from to time of bullying and cyberbullying.

METHODS: The participants included 792 students from sixth and seventh years of Primary Education (Mean_{age} = 10.81, SD = 0.85) in Ecuador. This is a quantitative longitudinal study. Cyberbullying and bullying scales were used for data collection before the lockdown in January and February 2020 (T1), and after 5 months of lockdown, at the end of the same academic year in July 2020 (T2). Descriptive, comparative and predictive analyses, a latent transition analysis was used to identify latent status of cyberbullying and bullying behavior at T1 and T2.

RESULTS: The results revealed a significant increase of cyberbullying after 5 months of the lockdown. Interestingly, only a small percentage of students who were uninvolved in cyberbullying and bullying in T1 remained uninvolved in T2.

CONCLUSIONS: The discussion explores the dynamics of cyberbullying involvement and examines changes in the roles and groups of bullying and cyberbullying after 5 months of lockdown. The political- and school-related implications of these findings are thoroughly discussed.

Keywords: cyberbullying; bullying; COVID-19; children; school; transitions.

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INTRODUCTION

The COVID-19 pandemic triggered a worldwide socio-sanitary crisis which continues to impact the development and well-being of societies worldwide.¹ Lockdown was introduced as an overwhelming step to combat the pandemic, aimed at minimizing contagion,² and radically transformed people's lifestyles.

In many school systems, students were suddenly obliged to continue their studies through an improvised system of online classes which radically affected

their learning progress, social relationships, and lives in general.³ In Ecuador, around 96,000 children and adolescents were affected by lockdown.⁴ This population turned out to be the most vulnerable, since they were exposed to serious emotional, psychological, and physical effects resulting from the closure of schools, the loss of contact with their peers, and the limitations imposed on free movement and leisure activities, among many others.⁵⁻⁷ The state of emergency declared during COVID-19 had severe consequences on the mental

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and emotional health of this population, in addition to the increase in antisocial behavior, in particular, online aggression such as cyberbullying.⁸

Cyberbullying is understood as harassment through Information and Communication Technologies and the Internet (email, messaging apps, chats, websites, or games) and can be defined as aggression carried out intentionally and repeatedly online against a victim who cannot easily defend him or herself.⁹ A common example is when threatening, aggressive messages are sent or videos/photos are posted to victimize other people.¹⁰ Face-to-face bullying is a psycho-social phenomenon characterized by aggressive behavior toward a victim (including physical and verbal abuse, social exclusion, etc.), and it was already extremely prevalent worldwide before lockdown, but was then affected by the lack of contact at school during lockdown.¹¹ It occurs face-to-face, and is prolonged, frequent and intentional, with an imbalance of power between a perpetrator and a victim, who cannot easily defend him or herself.¹² Several studies indicated that bullying and cyberbullying are related phenomena that share common characteristics (such as power imbalance, repetition, and intentional harm), but differ in terms of context, methods, and the potential for anonymity and reach.^{13,14}

In schools these phenomena are highly studied, showing a great negative impact of these both individuals and societies.¹⁵ Students who experienced bullying and cyberbullying, both in the role of victim and perpetrator, showed high rates of academic failure.¹⁶ They may also develop symptoms of depression, anxiety, borderline personality disorder, psychotic experiences,¹⁴ poor mental health, cigarette, and illicit drug use,¹⁷ low self-esteem,¹⁸ stress,¹⁹ fatalism,²⁰ and low satisfaction with life.^{21,22} Victims often suffer from sleep and eating disorders,²³ as well as suicidal ideation throughout their lives.^{14,24,25} In fact, among victims, suicidal ideation is a precedent for suicidal behavior and a predictor of future suicide attempts.²⁶ In addition, perpetrators show high levels of loneliness and social isolation.²⁷ Moreover, the consequences of cyberbullying are intensified by the unpredictability, invisibility (unnoticed by adults or authority figures unless victims report it), and speed of the attacks, which might lead to feelings of hopelessness and lack of control in victims' lives.²⁸

Research reported an overlap between bullying and cyberbullying indicating that students may not limit their immoral behavior to a single context.²⁹ Instead, individuals involved in bullying tend to involve in cyberbullying.³⁰⁻³² Several studies approached the bullying-cyberbullying overlap indicating that shared common situations, contexts, or risk factors might increase the likelihood to co-occur.²⁹ Cross-sectional studies indicated that students most likely to be cyberbullied often experienced in-person bullying before.³³

On the contrary, it is important to note that not all students involved in bullying are necessarily involved in cyberbullying. In this regard, some studies suggest that bullying and cyberbullying are quite distinct phenomena with different individuals and different psychosocial characteristics involved in each of these forms of bullying.³⁴ However, while several cross-sectional and longitudinal studies have already explored bullying and cyberbullying overlap (and non-overlap), and findings seem to vary greatly, it is important to recognize that both perspectives acknowledge that bullying and cyberbullying should be tackled simultaneously by including comprehensive and targeted actions to address them.

Regarding the transition from bullying to cyberbullying before lockdown, a study explored the victimization and aggression dimensions of bullying and cyberbullying and identified its eventual directionality. The sample was made up of 274 Spanish adolescents. The results showed an important simultaneity between the 2 behaviors and suggest that cyberbullying cannot be predicted by the subject's previous involvement in bullying. However, previous victimization is a risk factor for bullying and cyberbullying.³⁵

In this same context, the impact of lockdown on cyberbullying generated alarming results. A study that aimed to provide a detailed evaluation of research published between 2020 and 2023, found a significant increase in cyberbullying, however, a greater increase stands out in Asian countries and Australia.³⁶ The meta-analyses related to cyberbullying and lockdown showed that cyberbullying increased during lockdown, although it was lower in children than in adolescents, in addition, the stressors related to lockdown could be the main factors that contributed to the increase.³⁷ It was also evident that cyberbullying victimization was significantly higher during lockdown.³⁸ Another study, in which 200 Asian students participated, showed a close relationship between lockdown and cyberbullying, in the sense that cyberbullying increased due to the increase in the use of social networks during lockdown.³⁹

Therefore, more studies are needed to better understand whether changes in the context of bullying occurrence might provide keys to support bullying-cyberbullying overlap approach. Moreover, little is known about the changes over time in these 2 phenomena when the context of occurrence turns to online only. It is reasonable to suggest that understanding the common underlying dynamics of bullying and cyberbullying might be crucial to address the challenges in preventing these problem behaviors in children and adolescents. Furthermore, it might be useful to improve the effectiveness of prevention and intervention programs and create safer online and offline environments for individuals and communities.

The Current Study

Bullying and cyberbullying are antisocial phenomena that have been widely studied in recent decades. Studies have pointed out the bullying and cyberbullying co-occurrence, however, there is still no consensus on the relationship between these 2 problem behaviors or whether they represent the same phenomenon in different contexts. This current has considered bullying-in-person and cyberbullying as 2 different phenomena, analyzing separately, the overlap and the potential transition during COVID-19 pandemic lockdown. The current study offers a unique opportunity to investigate a relevant problem with health consequences at school and later on life, bullying and cyberbullying, as it started just before the COVID-19 lockdown was declared and resumed 5 months later.

The lockdown and the mandatory remote online learning lead Primary Education children engage in a continuous use of Information and Communication Technologies, and all their social relations were conducted online. Thus, studying bullying and cyberbullying before and after 5 months of lockdown could be key to better understand the relation and changes in these violent phenomena in Primary Education, as the lockdown conditions led to an upheaval in the social relations (without face-to-face contact) between Primary Education children, and provided a real-life situation that brings added value to this research. Moreover, the current study might be useful in further research to disentangle whether cyberbullying might occur in the absence of in-person bullying. At the same time, it might be useful in addressing and preventing bullying effectively.

The objective of the present study was therefore 2-fold: first, to explore whether cyberbullying (including any of its roles) increased during the lockdown, and second, to analyze transitions over time of bullying and cyberbullying taking into account the lockdown restrictive circumstances. Based on this theoretical framework, we assumed 2 hypotheses. H1: Forced by the lockdown conditions to spend more time online for educational and social purposes, Primary Education students might have increased their involvement in cyberbullying. H2: Students involved in bullying before lockdown due to the COVID-19 pandemic may have transitioned to cyberbullying after 5 months of lockdown.

METHODS

Participants

The participants were 792 students from sixth ($n = 393$, 49.6%) and seventh ($n = 399$, 50.4%) year of Primary Education, aged between 9 and 14 years old (mean_{age} = 10.81, SD = 0.85; 9 years old: $n = 24$; 10 years old: $n = 279$; 11 years old: $n = 337$; 12 years old: $n = 133$; 13 years old: $n = 16$; 14 years old: $n = 3$);

49.4% ($n = 394$) were boys and 50.6% ($n = 398$) girls. Missing cases ($n = 37$) were not included in the analyses. The participants were enrolled in 15 Primary Educations in the city of Cuenca (Ecuador), 8 of which were public, corresponding to 61.2% ($n = 485$) and 7 private schools, corresponding to 38.8% ($n = 307$); 93.5% ($n = 740$) of the participants were Ecuadorian. Most of the mothers ($n = 739$) and fathers ($n = 735$) were also Ecuadorian, with foreigners making up just 6.5% ($n = 51$) of the children, 6.3% ($n = 50$) of the mothers, and 7.2% ($n = 57$) of the fathers. The ethnic-cultural diversity was organized into 2 large groups, the majority consisting of Ecuadorians and mestizos ($n = 678$) and the minority group ($n = 114$) made up of children belonging to indigenous races or whose nationality, or that of their parents, was not Ecuadorian.

Instrument

The data were collected using a questionnaire containing items on socioeducational characteristics (sex, grade, nationality, parental nationality, belonging to ethnic-cultural groups, and the name of school) and 2 specific scales for the study variables:

The scale used to measure cyberbullying was the European Cyberbullying Intervention Project Questionnaire,¹⁰ validated in a sample of Primary Education students in several countries by Llorent et al.⁴⁰ It includes 22 items about violence through internet or mobile phone in the last 12 months, grouped into 2 dimensions: Cyber-victimization ($\alpha_{T1} = .96$, $\Omega_{T1} = .96$; $\alpha_{T2} = .80$, $\Omega_{T2} = .80$), composed of 11 items (eg, "Someone has threatened me through messages on the internet or the mobile phone") and Cyber-perpetration ($\alpha_{T1} = .94$, $\Omega_{T1} = .94$; $\alpha_{T2} = .86$, $\Omega_{T2} = .86$) composed of 11 items (eg, "I have threatened someone through messages on the internet or the mobile phone"). The items were answered on a 5-point Likert scale, including 1 (never) to 5 (more than twice a week). Calculations were performed for each dimension using this scale.

The European Bullying Intervention Project Questionnaire,¹⁰ validated for Primary Education in different countries by Llorent et al.,⁴⁰ consists of 14 items. The items refer to behavior related to types of physical, verbal or psychological abuse in the last 12 months, which are grouped into 2 dimensions: Victimization ($\alpha_{T1} = .84$, $\Omega_{T1} = .84$; $\alpha_{T2} = .45$, $\Omega_{T2} = .48$), encompassing 7 items (eg, "Someone has stolen or broken my things") and Perpetration ($\alpha_{T1} = .87$, $\Omega_{T1} = .87$; $\alpha_{T2} = .43$, $\Omega_{T2} = .47$), composed of 7 items (eg, "I have stolen or broken someone else's things"). The items were answered on a 5-point Likert scale, including 1 (never) to 5 (more than twice a week). Calculations were performed for each dimension using this scale.

Design and Procedure

This is a quantitative longitudinal study, that could be considered a pre-experimental pre-/post-test, with lockdown understood as a kind of intervention. The sample was selected using non-probabilistic sampling by convenience and accessibility, complying with the authorization granted by the educational institutions. Around the half of Primary Education schools of the city of Cuenca (Ecuador), 15 schools, were contacted through the head teacher of each one and the objectives of this study were explained. After confirming the collaboration, parental consents were obtained in all the classrooms of each school. The children were informed that the study was anonymized and confidential, and that the participation was voluntary. After these previous parts of the process, the questionnaires were administered during the regular classroom hours and were completed in 20 minutes. Data collection took place just before the lockdown in January and February 2020 (T1), and after 5 months of lockdown, at the end of the academic year in July 2020 (T2). At T1, the participants filled out the questionnaire as a paper-and-pencil survey in a quiet environment, the data collection were supervised by the researchers, who delivered and collected the questionnaires without any involvement of the teaching staff. At T2, because the face-to-face classes had been suspended due to the COVID-19 pandemic and the students were still in lockdown, the questionnaires were collected by the researchers online, with the teachers allowing the researchers access to the online class to administer the questionnaires online. In this study, both the pre-test and post-test questionnaires were answered by the same students.

Data Analysis

The reliability of the scales and their dimensions were calculated using Cronbach's Alpha and McDonald's Omega with the software Factor 10.5.02. Descriptive analyses were performed (frequencies, SDs, means, and percentages) with SPSS 25. Student's *t* test to carry out comparative analyses between the variables before lockdown and after 5 months of lockdown was used. Cohen's *d* was calculated to obtain the effect size using Campbell Collaboration calculator. In addition, to make comparisons between the different roles, the odds ratio and the 95% confidence interval were calculated before and after 5 months of lockdown, to detect the significance of the change and to know the effect size of that change. To identify the predictor variables (T1) of the cyberbullying roles after 5 months of lockdown (T2), we performed a multinomial logistic regression, taking the role of "not involved in cyberbullying (T2)" as the reference value. The roles of bullying and cyberbullying were obtained by classifying the students as pure victims if they responded "at

least once a month" to any item focused on Victimization and "never" or "once or twice" to any item on Perpetration. Students were classified as bullies if they responded "at least once a month" to any item focused on Perpetration and "never" or "once or twice" to any item on Victimization. Bully-victims were the students who responded "at least once a month" to any item on both Victimization and Perpetration. Students who responded "never" or "once or twice" to all the items on Victimization and Perpetration were considered Not involved. All these analyses were performed with the software SPSS 25.

Then, a latent transition analysis with SAS 9.4 statistical software and Proc LTA macro-Version 1.3.2⁴¹ was used to identify latent status of bullying and cyberbullying behavior (both perpetration and victimization) at T1 (before lockdown) and T2 (after 5 months of lockdown). Different models were estimated by varying the number of latent status (2 to 8 latent status models were performed). Models with 4 and 5 latent statuses were thoroughly examined by comparing the information criteria on $-Log$ Likelihood ($-LL$), G^2 , degrees of freedom, the Akaike information criterion (AIC) and the Bayesian information criterion (BIC).

RESULTS

The comparative analyses of cyberbullying and bullying, before lockdown (T1) and after 5 months of lockdown (T2), among the participants ($n = 792$) showed significant differences in the dimensions of both phenomena, with considerable effect sizes, as shown in Table 1.

A detailed analysis of different roles of cyberbullying (cyber-victims, cyberbullies, and cyberbully-victims; $n = 792$) showed a significative increase in the number of individuals in each role. Moreover, the percentage of students not involved in cyberbullying decreased from nearly 90% before lockdown to under 25% after 5 months of lockdown. The data also indicated a significant change in the distribution of the 3 cyberbullying roles after 5 months of lockdown (Table 2).

An analysis of bullying roles (victims, bullies, and bully-victims) showed the following changes before lockdown (T1) and 5 months into lockdown (T2). Before lockdown (T1), 199 students were victims of bullying. After 5 months of lockdown (T2), the number of bullying victims decreased to 132 (66.3%). Of the original 199 victims 4 became bullies (2%), 4 became bully-victims (2%) and 59 were no longer involved in bullying (29.6%). Table 3 shows that, before lockdown, victims of bullying indicated low probabilities of becoming involved in cyberbullying. However, 17.9% of these victims did assume different cyberbullying roles at T1. After 5 months of lockdown, 76.9% of the initial 199 bullying victims became

Table 1. Cyberbullying and Bullying Before Lockdown and After 5 months of Lockdown

	T1 Mean (SD)	T2 Mean (SD)	t	p	d (95%CI)
Cyber-victimization	1.17 (0.34)	1.33 (0.33)	-22.97	<.001	-0.48 (-0.58, -0.38)
Cyber-perpetration	1.12 (0.34)	1.31 (0.35)	-29.30	<.001	-0.55 (-0.65, -0.45)
Victimization	1.63 (0.67)	1.31 (0.34)	19.08	<.001	0.60 (0.50, 0.70)
Aggression	1.29 (0.38)	1.12 (0.16)	15.90	<.001	0.58 (0.48, 0.68)

Table 2. Distribution of Cyberbullying Roles Before Lockdown and After 5 Months of Lockdown

	T1		T2		OR	95% CI
	n	%	n	%		
Not involved	685	86.5	170	21.5	0.04	0.02-0.09
Cyber-victims	58	7.3	166	21.0	3.38	1.38-8.25
Cyberbullies	16	2.0	211	26.6	17.76	4.09-77.12
Cyberbully-victims	21	2.7	245	30.9	16.11	4.47-58.04

Twelve cases of missing data at T1.
CI, confidence interval; OR, odds ratio.

Table 3. Bullying Victims in T1 Involved in Cyberbullying Roles (T1 and T2)

	T1		T2		OR	95% CI
	n	%	n	%		
Not involved	161	80.9	46	23.1	0.07	0.04-0.14
Cyber-victims	31	15.6	40	20.1	1.36	0.66-2.82
Cyberbullies	1	0.5	43	21.6	54.83	3.27-919.16
Cyberbully victims	3	1.5	70	35.2	35.67	6.76-188.33

Three cases of missing data at T1.
CI, confidence interval; OR, odds ratio.

involved in various cyberbullying roles. The most significant increases were in the number of students who became cyberbullies and cyberbully victims (Table 3).

Before lockdown, most of the bullies in our sample (80%) were not involved in cyberbullying. However, after 5 months of lockdown, 80% of T1 bullies become involved in cyberbullying roles: more than 13% as cyber-victims, almost 27% as cyberbullies, and 40% as cyberbully victims. For more details, see Table 4.

Before lockdown, around 59% of bully-victims in our sample were not involved in cyberbullying. However, after 5 months of lockdown, over 80% of T1 bully-victims became involved in cyberbullying roles: more than 13% as cyber-victims, more than 23% as cyberbullies, and more than 45% as cyberbully-victims (Table 5).

Before lockdown, around 94% of uninvolved students in bullying (in our sample) were not involved in cyberbullying. However, after 5 months of lockdown, around 80% of T1 uninvolved students

Table 4. Bullies in T1 Involved in Cyberbullying Roles (T1 and T2)

	T1		T2		OR	95% CI
	n	%	n	%		
Not involved	12	80.0	3	20.0	0.06	0.03-0.13
Cyber-victims	1	6.7	2	13.3	2.14	0.81-5.66
Cyberbullies	2	13.3	4	26.7	2.37	1.13-4.92
Cyberbully victims	0	0	6	40.0	132.67	8.01-2179.90

Six cases of missing data at T2.
CI, confidence interval; OR, odds ratio.

Table 5. Bully-Victims in T1 Involved in Cyberbullying Roles (T1 and T2)

	T1		T2		OR	95% CI
	n	%	n	%		
Not involved	43	58.9	13	17.8	0.15	0.08-0.29
Cyber-victims	9	12.3	10	13.7	1.13	0.50-2.58
Cyberbullies	5	6.8	17	23.3	4.16	1.68-10.30
Cyberbully-victims	15	20.5	33	45.2	3.20	1.71-5.98

One case of missing data at T1.
CI, confidence interval; OR, odds ratio.

Table 6. Bullying Uninvolved Individuals in T1 Involved in Cyberbullying Roles (T1 and T2)

	T1		T2		OR	95% CI
	n	%	n	%		
Not involved	448	93.7	103	21.5	0.02	0.01-0.05
Cyber-victims	15	3.1	108	22.6	9.13	2.68-31.04
Cyberbullies	8	1.7	136	28.5	38.65	5.14-290.73
Cyberbully-victims	1	0.2	131	27.4	188.33	2.29-15477.47

Six cases of missing data at T1.
CI, confidence interval; OR, odds ratio.

engaged in cyberbullying at T2: almost 23% as cyber-victims, more than 28% as cyberbullies, and more than 27% as cyberbully-victims. For more details, see Table 6.

Various variables, including age, sex, type of school, ethnic-cultural group, and bullying roles before lockdown were examined as predictors of cyberbullying after 5 months of lockdown. The results of the multinomial logistic regression model ($\chi^2 = 27.26$, $df = 21$, $p = .16$, Nagelkerke Pseudo $R^2 = .04$) did not provide strong evidence to predict cyberbullying behavior after 5 months of lockdown based on the examined variables (Table 7). The p -value indicated that the overall model did not reach statistical significance, which suggests that the relationship between the predictor variables and the outcome variable (cyberbullying after lockdown) was not statistically significant. Also, a low R^2 value suggests that the model may not explain much of the variance in cyberbullying behavior after lockdown.

Table 7. Predictors Before Lockdown (T1) for Cyberbullying Roles After 5 Months of Lockdown (T2)

Predictor variables (T1)	Cyber-victims (T2)		Cyberbullies (T2)		Cyberbully-victims (T2)	
	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>
Age	1.00	1.00	0.93	.58	1.08	.54
Sex	1.11	.63	0.98	.85	1.25	.27
Type of school	0.81	.37	0.93	.73	1.39	.12
Ethnic-cultural group	1.16	.64	0.89	.71	0.93	.81
Victim	0.77	.32	0.69	.14	1.21	.42
Bully	0.63	.61	1.60	.51	1.60	.52
Bully-victim	0.58	.25	0.95	.90	1.91	.07

The reference role is not involved.

Transitions and Continuity in Bullying and Cyberbullying After 5 Months of Lockdown

To identify changes in bullying and cyberbullying before and after 5 months of lockdown, models with 4 and 5-latent status were tested in-depth. A 5-status model was chosen as it showed a better fit, after considering parsimony (log-likelihood = -2769.76; $G^2 = 337.60$; AIC = 425.60; BIC = 631.28; df = 211) in comparison to the 4-status model (log-likelihood = -2780.22; $G^2 = 358.53$; AIC = 420.53; BIC = 565.44; df = 224). Based on students' responses to each item of bullying and cyberbullying, the 5 groups were labeled as uninvolved in bullying and cyberbullying, highly involved in bullying and cyberbullying, high bullying victimization, high cyberbullying perpetration, and high cyberbullying perpetration and victimization.

As shown in Figure 1, most of the students in T1 (65.1% of total sample) were uninvolved in bullying and cyberbullying as they indicated low percentages of bullying and cyberbullying perpetration and victimization (<7%), but only 11.4% maintained their membership in T2 (Figure 1). The group highly involved in bullying and cyberbullying (4.5% in T1 and 17.6% in T2) included participants who showed high implication in bullying victimization (100%), high cybervictimization (72.8%) and high cyberperpetration (73.1%), but medium implication in bullying perpetration (30%). High bullying victimization group (26% in T1 and 5.2% in T2) included participants with high probabilities of involvement in bullying victimization (100%) and low implication in bullying perpetration (20.5%), cybervictimization (15.4%), and cyberperpetration (0%). High cyberbullying perpetration group (1.7% in T1 and 27.6% in T2) included participants with high probabilities of involvement in cyberperpetration (81.7%) and low probabilities for bullying perpetration (11.1%), victimization (16.9%) and cybervictimization (0%). High cyberbullying perpetration and victimization group (2.7% in T1 and 38.3% in T2) included participants

with high probabilities of involvement in cybervictimization (100%) and cyberperpetration (54.5%), but low probabilities of involvement in bullying victimization (13.4%) and perpetration (7.2%).

In T2, around 15.6% of the uninvolved group remained uninvolved, while the rest of participants transitioned to high cyberbullying perpetration (37.5%) and high cyberbullying perpetration and victimization (47%) groups. Most of the participants of the highly involved in bullying and cyberbullying maintained their group membership in T2 (70.7%); when transitioning, they were most likely to transition to high cyberbullying perpetration and victimization group (24%). Participants from high cyberbullying perpetration group in T1 usually maintain their violent behavior (43%), while most of them transitioned to high cyberbullying perpetration and victimization group (57.4%). Participants from the high bullying victimization group were more likely to transition to highly involved in bullying and cyberbullying (55.4%), high cyberbullying perpetration and victimization (11.4%), high cyberbullying perpetration (8.7%), uninvolved (4.7%) groups, while only 19.9% continued to show high implication in bullying victimization. Participants from high cyberbullying perpetration and victimization group maintained their online violent behavior in T2, it was also increased with participants of the rest of the groups.

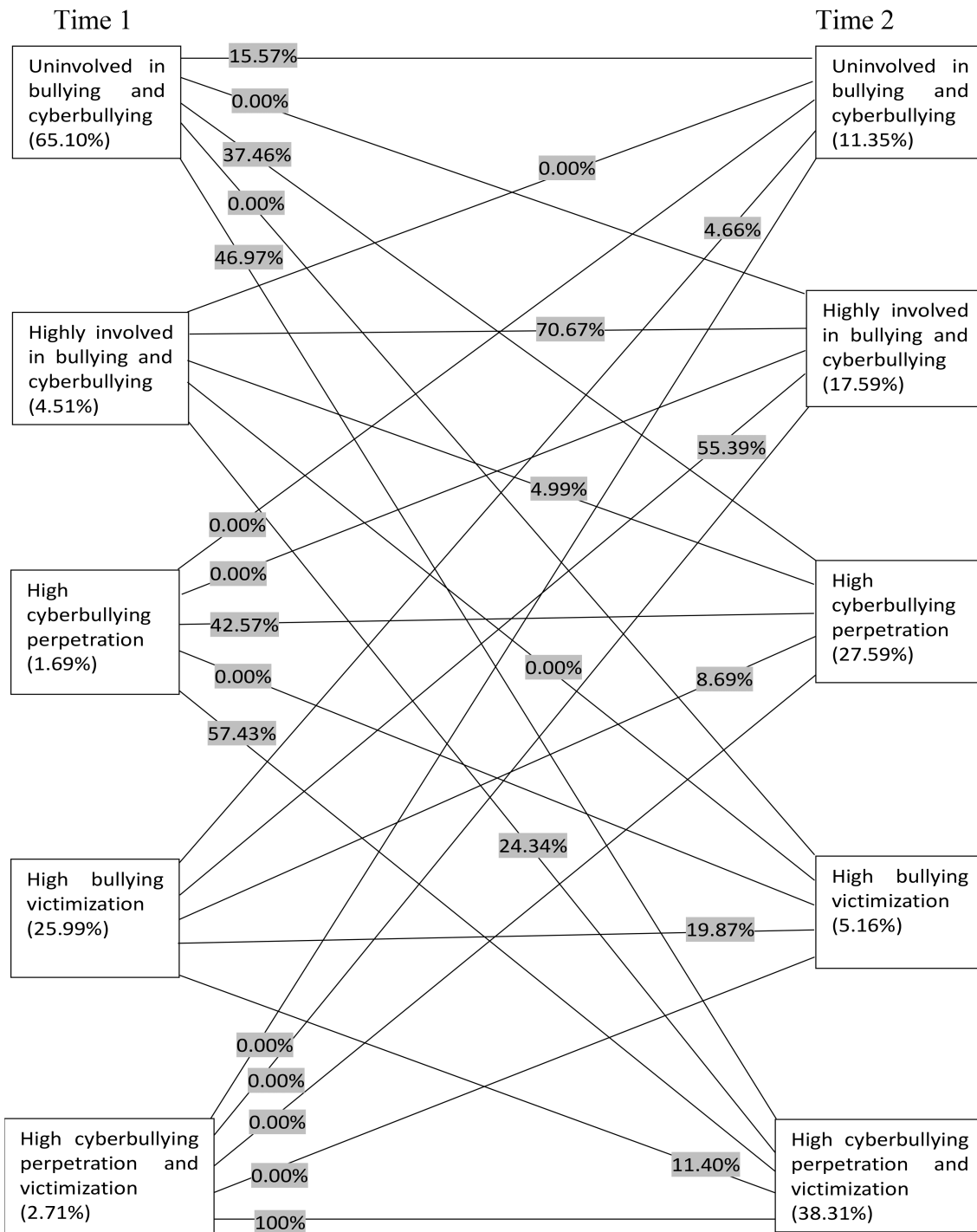
DISCUSSION

After the outbreak of the COVID-19 pandemic, schooling switched to an online remote format. In the Ecuadorian context, the Ministry of Education, taking up the slogan "Let's learn together at home," encouraged classes to continue through distance education, and sought to provide the relevant methodological, pedagogical, social and emotional tools. An attempt was made to promote and strengthen a contextualized model of education which could respond to the diverse needs of the Ecuadorian territory, upholding every child's right to education despite the severe health crisis.⁴ This new arrangement, however, also led to an increased cyberbullying.

Cyberbullying and bullying are harmful forms of school violence that have serious consequences for individuals and the wider school community.^{13,14} Address and prevent bullying and cyberbullying appropriately is crucial. The objective of this study was to explore whether cyberbullying increased during lockdown and whether there was a transition from bullying to cyberbullying on Primary Education students in Cuenca (Ecuador).

According to our results, probabilities to involve in cyberbullying behavior increased after 5 months of lockdown, and this increase was evident for

Figure 1. Transitions Among Different Offline and Online Bullying Involved Groups $n = 792$ students; In parentheses, estimates of group membership probabilities.



both cyber-victimization and cyber-perpetration. Also, every role of cyberbullying increased from the students belonging to every role of bullying and also from the group of uninvolved in bullying. Thus, cyberbullying grew sizeable from students involved and uninvolved in bullying. According to the results the growth of

cyberbullying is not originated only as a clear transition from bullying.

Findings showed that only a low percentage of students uninvolved in bullying and cyberbullying in time 1 maintained uninvolved during the lockdown. Many students from the uninvolved group in time 1

changed to high cyberbullying perpetration and high cyberbullying perpetration and victimization groups after 5 months of lockdown. It might be possible that spending more time online due to remote learning, entertainment, socializing and increased digital communication to stay connected with peers, could have provided more opportunities to involve in cyberbullying, particularly to those individuals who not engaged in such behavior. The increase in digital activity during lockdown generated greater exposure to cyberbullying. Recent studies demonstrate an increase in both the frequency and severity of cyberbullying incidents during lockdown, attributable to the lack of direct supervision, increased internet use, and increased stress and anxiety derived from the pandemic^{37,42} and the use of social networks.³⁹ These findings highlight the need to implement more effective prevention and intervention strategies in the digital sphere, to address and mitigate the impact of cyberbullying from schools, maybe focusing on the role of teachers and the curriculum. Research conducted in non-pandemic environment have already indicated that students who spend time online are more likely to engage in online risky behaviors, including cyberbullying.⁴³ Consistent with previous studies,⁴⁴ our findings point out to a combination of different factors such as the strict social norms during COVID-19 pandemic (particularly, in the outbreak of the pandemic) that could have led to higher levels of fear, stress and anxiety,⁴⁵ with students spending more time online, with poor skills to cope stress and anxiety,⁴⁶ which could made students more vulnerable to or involving in cyberbullying.

Another relevant finding is that most individuals highly involved in bullying and cyberbullying before lockdown maintained their antisocial behavior in time 2. This might be true according to bullying and cyberbullying definitions, as they are defined as frequently repeated violent behaviors over time.¹² Moreover, previous studies showed that bullying and cyberbullying are relatively stable during early adolescence and adolescence given the personal antisocial potential of individuals.²⁹ This might suggest that students involved in bullying and cyberbullying follow the same pattern of behavior but in different contexts. After 5 months of lockdown, results showed that students from the group highly involved in bullying and cyberbullying were most likely to transition to high cyberbullying perpetration and victimization group. This result is not surprising taking into account that during the lockdown communication and social interactions with peers theoretical were carried out exclusively in the online context, mediated by technology and Internet. Thus, it is reasonable to suggest that online and offline bullying continued to occur in the cyberspace.

Findings showed that students from high cyberbullying perpetration group in time 1 maintained their violent behavior after 5 months of lockdown, while most of them transitioned to high cyberbullying perpetration and victimization group. A possible explanation might relate to a phenomenon in criminology namely the victim offender overlap, which highlights the relation between involving in criminal behavior and experiencing the role of victim. This phenomenon shows the relationship between committing criminal acts and being a victim of them.^{47,48} Our findings show that a continued involvement in cyberbullying perpetration increase the risk of offending, but also the risk of becoming victims in cyberspace. Thus, findings underscore the urgently need for comprehensive intervention and prevention programs that address both victimization and offending behaviors.

Students who reported high bullying victimization prior to lockdown were more likely to transition to highly involved in bullying and cyberbullying, and high cyberbullying perpetration and victimization groups, and only a low percentage continued to show high implication in bullying victimization after 5 months of lockdown. These results shed light on the vulnerability of students involved in bullying victimization and confirms the need for early intervention programs to effectively reduce bullying in both online and offline contexts. It is reasonable to suggest the importance to provide support and counseling services for victims, provide them skills to cope with the emotional and psychological effects of bullying and cyberbullying, as well as to ensure that they feel safe and supported in reporting harassment.^{49,50}

To sum up, the students involved in high cyberbullying perpetration and victimization before lockdown maintained their online violent behavior after 5 months of lockdown. Moreover, probabilities to group membership increased after 5 months of lockdown. It is possible that some students do not fully understand the consequences of being involved in cyberbullying or probably during the lockdown they did not face any real consequences for their harmful behavior, which could have led to further involvement in cyberbullying.^{51,52} Thus, to address and prevent cyberbullying, more efforts emphasizing the importance of social and emotional competencies, where responsible online and offline behavior are needed.^{53,54}

IMPLICATIONS FOR SCHOOL HEALTH POLICY, PRACTICE, AND EQUITY

Schools can play a crucial role in preventing bullying and cyberbullying by implementing comprehensive strategies focused on education, prevention and intervention. Prevention programs to deal with

bullying and cyberbullying require a holistic approach and ongoing efforts involving schools, families, and communities to create a respectful and inclusive online and offline environment for students. Of course, in breaking the cycle of bullying and cyberbullying, intervention and support for both perpetrators and victims are crucial to adequately address their social and emotional needs, copying these relevant problems with health consequences at school and later on life. Furthermore, prevention actions must place greater emphasis on primary prevention, that is, avoiding the appearance of these 2 phenomena,⁵⁵ in addition to considering the modulating effect of moral emotions on antisocial behaviors.⁵⁶ Also, the importance of addressing these 2 behaviors in a differentiated way, since bullying does not predict cyberbullying, requiring new specific school practices in each phenomenon.

Limitations

The research has several limitations. Despite collecting data from hundreds of Primary Education children, the sample was not representative, which prevents us from generalizing our conclusions. Another limitation is related to the use of self-reports; it could have been complemented with other instruments, such as interviews. While the instrument is generally very reliable, the reliability of the 2 dimensions of bullying at T2 invites us to exercise caution in drawing the affected conclusions. It is important to highlight that self-report measures, in some cases, may be unobjective techniques and may be biased by the person's introspection abilities.⁵⁷ Studies found little correlation between the reporting of behaviors and their actual execution, probably due to social desirability, since low or no results are reported in self-reported questionnaires.⁵⁸⁻⁶⁰ Additionally, some studies that use self-report measures to increase their sample numbers, highlight precisely the number of participants as a strength of their procedures and guarantee of the generalization of their results.⁶¹ It is possible that the face-to-face bullying scale may have been confusing for the children due to the absence of physical contact after 5 months of lockdown. Also, other factors related to lockdown could not have studied, which make us cautious in our conclusions. On the other hand, the present study also possesses significant strengths. It is a longitudinal study conducted with a 5-month gap between data collection before lockdown and 5-months after, highlighting the importance of teaching students social and emotional competencies in cyberspace. Emphasizing respect, ethical behavior, and moral conduct online and offline is crucial for effectively applying these skills under stressful circumstances, such as the COVID-19 pandemic lockdown.

Conclusions

Current findings are useful to advance knowledge on bullying and cyberbullying and to comprehensively address both forms of peers' violence. This study point out the importance of promoting positive online spaces as well as implementing anti-bullying programs and curricula focused on social and emotional competencies,⁴⁰ raising students' awareness of the negative consequences of cyberbullying and bullying for both victims and aggressors, teaching them responsible decision-making skills, conflict resolution, and positive online and offline communication as strategies that schools can implement and integrate into regular classroom activities to prevent bullying and cyberbullying.⁶² Therefore, schools should promote social and emotional competencies as a key educational area to prevent antisocial behaviors and foster children's individual development, and respect for the diversity in society.

Conflict of Interest

None.

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