

Depression and Cyber-Victimization among Middle School Students in Morocco

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Abstract

Background: Cyber-victimization is a real health problem worldwide. It has a negative impact on middle school students' mental health.

Objective: To evaluate the depression score among cyber-victimized middle school students in Morocco.

Method: It's a cross-sectional study based on an anonymous self-report questionnaire about cyber-victimization and depression during the last twelve months. Data were collected in 44 middle schools in the urban area of three Moroccan zones. A total of 3785 students aged between 12 and 16 participated in the study. Cyber-victims refer to students who were cyber-victimized twice or more in the past twelve month. In our sample 72,3% (n=2736) were cyber-victims. We used a hierarchical multiple Regression to examine the relationship between independent variables and depression.

Results: In the past twelve months 49,4% (n=1351) of cyber-victim participants were depressed and the difference between girls and boys was significant: (51,4% (n=732) vs 47,2% (n=619)) respectively $p=0,03$.

The most important predictor of depression score was cyber-victimization score $\beta=0,17$ $t=10,98$ $p<0,001$. The cyber-victimization score variable explained 3 % of variation to the depression score among middle school students and $p<0,001$. Age is a strong positive predictor of depression ($\beta=0,10$, $T=6,59$, $p<0,001$). Both cyber-victim adolescents and depressed cyber-victim ones spoke little of their experience of cyber-victimization.

Conclusion: Cyber-victimization is a real problem among middle school students in Morocco. It is the main cause of depression. Hence action needs to be taken to face this problem.

Keywords: Cyber-victimization, adolescent, middle school, depression, coping, Morocco.

Introduction

Cyber bullying is a growing problem among adolescents in middle school¹. Most of the existing

research concerned young adolescents because the problem is very widespread among this category² anywhere and at any time³. Currently, several definitions have been used. Smith defines cyber bullying as "an aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself"⁴. While, Hinduja defines it as "voluntary and repeated damage caused by the use of computers, cell phones and other electronic devices"⁵. In general, cyber-bullying rate prevalence ranges between approximately 2,3% and 72%⁵.

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Regarding cyber-victimization, individuals who received cyber bullying behaviors are considered cyber-victims. Researches on the effect of gender on cyber-victimization showed no difference between girls and boys⁶. Others have demonstrated that girls are more cyber-victimized than boys⁷. Regarding the effect of age on cyber-victimization, some studies found no correlation between age and cyber-victimization⁸. Others revealed that cyber-victimization increases with age⁷.

Cyber-victimization causes many psychological problems among adolescents especially depression^{9,10}, suicide and suicidal ideation¹¹, social anxiety, low self-esteem¹² and addictive tendency¹³. Besides cyber-victimization has a negative impact on academic performance¹⁴.

The current study aims to investigate moderator effects of gender, age, type of school and cyber-victimization on depression among middle school students and their coping strategies.

Materials and Method

Study Population: This is a cross-sectional study conducted from 1st November 2017 to 30th March 2018 in three.

Moroccan zones (North, East and South). The 3785 Participants were randomly taken from 44 middle schools in urban areas.

The inclusion criteria were middle school students aged between 12 and 16 and had regular access to internet. The exclusion criteria were either students' or parents' refusal to participate or participants who did not answer all questionnaire items.

Stage of the research:

1st Step: The Ethics Committee for Biomedical Research of Mohammed V University in Rabat has approved the study protocol (IORG0006594). The study was approved also by the ministry of education, the regional education academy and schools' principals. Parents received a written letter of consent which included information about the study, explanations about their child's participation and a reply coupon. In addition, the students were informed of the anonymous and confidential nature of the study. What is more important is that no investigation was done before getting students' verbal consent.

2nd Step

Measuring Tool:

Cyber-victimization: The study used a self-report questionnaire based on the Hinduja one¹¹. The questionnaire included 20 questions exploring the socio-demographic context, the practices of information and communication technology (ICTs), and seven items on cyber-victimization during the last twelve months. The seven items are: 1-receive unpleasant texts messages, 2-show others embarrassing photos or videos online without permission, 3-Log in to someone's IM account without his permission and pretend to be him, 4-Take someone's personal mail without permission and publish it, 5-Hack someone's personal data, 6-Insult someone online, 7-Block and exclude someone from the online group (Alpha coefficients for this scale was 0,88). The questionnaire was evaluated according to the seven variables of the Likert scale: never happened (coded 0), once (coded 1), twice to three times a month (coded 2), once a week (coded 3) and several times a week (coded 4). A total score is calculated by summing the seven items (scores range from 0 to 28). We can't talk of cyber-victimization unless the student was cyber-victimized twice or more.

Depression Questionnaire:

The risk of depression was measured using the self-administered adolescent questionnaire (ADRS) 10 item patient version¹⁵. For each item, the student answered yes (coded 1) or no

(coded 0). The total ADRS score was between 0 and 10. Indeed, the identification of the risk of depression is when the score falls below the threshold of 4. (Alpha coefficients for this scale was 0,70)

3rd Step:

Statistical Analysis: The data were analyzed using SPSS software version 23.0. The results expressed as mean \pm standard deviation for the quantitative variables and frequency for the qualitative variables. We performed Hierarchical multiple regression analysis. The effect of gender, age and type of school were tested independently as control variables before examining the effect of cyber-victimization on the depression score. The confidence interval of 95% was considered statistically significant at 5%.

Results

Prevalence of depression and cyber-victimization:

Our study showed that depression prevalence among cyber-victim participants were 49,4% (n=1351). There was a significant gender difference: 51,4% (n=732) were girls and 47,2% (n=619) were boy *sp*= 0,03. The difference was significant between the depressed cyber-victim participants aged between 15 and 16 years and those aged between 12 and 14 (56,7% (484) vs 46,1% (867)) *p*<0,001. 52,9% (1092) were public school students and 38,5%(259) were private school ones.

Effects of gender, age and type of school on depression score: The Hierarchical multiple regression revealed that age, gender and type of school contributed significantly to the regression model, *F*= 29,55 *df* =3 *p*<0,001 and accounted for 2,2 % of the variation in depression score. Age is a strong positive predictor of depression ($\beta = 0.10, t = 6.59, p < 0.001$). This means that students aged between 15 and 16 years were more likely to be depressed than students aged between 12 and 14.

Girls were more prone to depression than boys ($\beta = 0.06, t = 3.69, p < 0.001$) (table 1).

Cyber-Victimization and Depression: The cyber-victimization score variable explained 3 % of variation to the depression score and this change in *R*² was significant, *F*= 53,02, *df* = 4 *p*<0,001.

The Interaction Effects of gender,age and type of school with Cyber-Victimization.

The most important predictor of depression score was cyber-victimization score $\beta=0,17 t = 10,98 p < 0,001$. The addition of gender*cyber-victimization score, age*cyber-victimization score and type of school*cyber-victimization score to the regression model has no significant effect on the depression score. In other words, the interaction between each of the four variables: age, gender, type of school and cyber-victimization. Neither add any change to the variation of the depression score nor were significant predictors of depression score (table 1).

Table 1: hierarchical multiple regression using depression as dependant variable

	Unstandardized Coefficient		Unstandardized Coefficient	t value	CI
	B	SEB	β		
Variables					
Model 1					
Gender	0,28	0,07	0,06***	3,69	[0,13-0,44]
Age	0,58	0,08	0,10***	6,59	[0,40-0,75]
Type of school	0,46	0,09	0,08***	5,02	[0,28-0,65]
Model 2					
Cyber-victimization	0,07	0,007	0,17***	10,98	[0,06-0,09]
Model 3					
Gender*cyber-victimization	0,001	0,014	0,004	0,077	[-0,027-0,029]
Age*cyber-victimization	0,016	0,015	0,055	1,037	[-0,014-0,046]
Type of school*cyber-victimization	0,005	0,018	0,022	0,296	[-0,029-0,040]

Model 1, adjusted for gender, age and type of school, *R*²= 0,022, *df*= 3, *f*=29,66.

Model 2, adjusted for cybervictimization, *R*²=0,052, *df*= 4, *f*=53,02.

Model 3, gender*cybervictimization, age*cybervictimization, type of schoo*cybervictimization, *R*²=0,052, *df*=7, *f*=30,47.

n= 3785. ****p*<0,001***p*<0.01; **p*<0.05.

Behavior Reaction: In our sample generally cyber-victimized adolescents didn't talk about their cyber-victimization to someone. However, most of the participants who reported talking about their experience talked about it to foreign person 32,2% (n=882) or to their friends 28,5% (n=780). Few adolescents informed their families or their teachers about their cyber-victimization.

The difference was not significant between the depressed cyber-victim adolescents and those who were not concerning the fact of talking about their cyber-victimization (table 2).

Table 2: Students' reaction to cyber-victimization

	Cyber-victims n=2736				
	Depressed Participants				
^b Variables:	Yes n=2736	Yes n=1351	Not n=1385	X ² ^a p-value	CI
Talking about cyber-victimization					
foreign person	882(32,2%)	436(49,4)	446(50,6)	0,002	[-0,15-0,16]
With parents	235(8,6)	107(45,5)	128(54,5)	1,522	[-0,43-0,10]
With siblings	219(8,0)	106(48,4)	113(51,6)	0,091	[-0,31-0,23]
With teachers	46(1,7)	29(63,0)	17(37,0)	3,495	[-0,03-1,17]
With friends	780(28,5)	374(47,9)	406(52,1)	3,118	[-0,01-0,31]

Note: ^a P-value by X² test, ***p<0.001; **p<0.01; *p<0.05.

^bEffectif (percentage)

Discussion

Our results showed that half of cyber-victim participants were depressed and that the more students are cyber-victimized the more they become depressed. This result is consistent with that found by previous studies^{7,16}.

Regarding age, our results showed that participants aged between 15 and 16 years developed depression more than younger adolescents. This result was in line with previous studies¹⁷.

According to previous studies cyber-victimization, which is the major predictor of depression, increases with age⁷. This is probably why older adolescents were more likely to be depressed. It may be caused by the fact that they are more isolated. They believe that they can solve their problem by themselves. Moreover, they get less help or inappropriate one from adults.

Considering gender effect, girls were more likely to be depressed than boys. This finding was consistent with the previous studies^{17,18}. This tendency to depression in girls would be linked to variations in hormonal secretions

especially during the puberty, more dissatisfaction with their bodies and low self-esteem than boys^{19,20}

The effect of type of school was more important. Public school cyber-victims were more likely to develop depression. Unfavorable conditions in public schools: crowded classes as well as the low socioeconomic level of pupils would be among the causes of the differences between private and public schools. Students in private school probably have more knowledge about the risks of inappropriate use of ICTs. Some studies showed that adolescents from low socioeconomic background and those with a low level of education are more vulnerable to cyber-victimization and depression²¹.

Regarding the Strategy of dealing with cyber-victimization, we found that most of the cyber-victims preferred not to confide. Few cyber-victim participants talked about their suffering. Those who do, prefer to talk to foreign people or friends. As previously reported, cyber-victim adolescents have a tendency to confide especially to their friends²². This is due to the fact that friends or foreign people have no power on adolescents and therefore they won't be punished. Few of those who confided spoke to their family (parents (less than 10%),

sibling) or to their teachers. Those results were in line with previous researches^{23,24}. May be adolescents just resort to silence for fear of being punished by adults by depriving them of internet access or supervising them more. Besides, they seek independence from their families:

Furthermore, depression has no impact on adolescents' behavior. In other words talking about cyber-victimization is not influenced by the fact of being depressed or not

Despite the interesting results obtained, many difficulties were encountered. As we used a self-administered questionnaire, the answers could be over or under estimated by the respondents. However, the strength of this study is the large sample and the use of validated scales. The responses related to events that have occurred in the past. Their impact could change over time. There by, longitudinal researches were needed to assess the impact of cyber-victimization on mental health.

Conclusion

In conclusion, the current study suggests that Cyber-victimization is a real problem among middle school students in Morocco. Adolescents involved in cyber-victimization are at increased risk for depression. Moreover, cyber-victimized girls are more prone to depression than boys, though none of them tend to talk about it. Hence, prevention programs should include teachers and families intervention in order to show them the importance of social support. Undoubtedly, parent teachers-adolescents communication is the important point to prevent cyber-victimization and its negative impact.

Conflict of Interest: No

Source of Funding: No

Ethical Approval: The procedures were carried out in accordance with the recommendations of the Internal Ethics Committee of the Center for Doctoral Studies, Faculty of Medicine and Pharmacy, Mohammed V University, Rabat, Morocco. This procedure was examined and approved by the Committee.

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