Cyberbullying Victimization and Its Association with Self esteem and Emotional Intelligence Among adolescents: An Intervention Study

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Abstract:

Background: Cyberbullying behaviors represent major social problem and cyberbullying victimization has strong association with emotional intelligence and self esteem among adolescents.

Aim: The aim of this study was to assess the effectiveness of the training program on cyberbulleying victimization and its association with emotional intelligence and self esteem among adolescents.

Research design: A descriptive cross-sectional research design was used to carry out the first part of the study and a quasi - experimental design (Pre – post) test was used to assess the effectiveness of the intervention on cyberbulleying victimization and its association with emotional intelligence among adolescents.

Settings: The study was conducted at the faculties of law and pharmacy at Zagazig university. **Tools of data collection:** A Self-Administered Questionnaire including the following parts: Socio-demographic data sheet, a standardized cyber bullying victimization scale for adolescents, Wung and law scale for emotional intelligence for youth, Rosenberg self esteem scale, and intervention program to improve cyberbullying victimization among adolescents.

Results: There was a statistically significant post –intervention improvement in adolescents' cyberbullying victimization ($P < 0.001$*) (n=90). The results also revealed that there was a statistically significant post – intervention improvement in adolescents' self esteem and Emotional Intelligence. (pre, post test) $p<0.001$.

Conclusion: the training program affect positively throughout decreasing the cybervictimization and improve the adolescents self esteem and emotional intelligence.

Recommendations: Intervention programs for adolescents are essential to decrease exposure to cyberbullying victimization, and further research is suggested to determine the effects of cyberbullying victimization on adolescents' health

Keywords: Cyberbullying Victimization, Emotional Intelligence, Self esteem, Adolescents, Intervention study

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Introduction

Due to development in digitalism, a major psychosocial problem known as cyberbullying has been emerged. Cyberbullying is defined as hostile and intentional behaviors perpetrated by an individual or a group of people against peers or people who are unable to defend themselves by utilizing communication technologies (internet, mobile phones, chat or instant messaging, websites, online games, etc.) over time (Abaido, 2020).

Cyberbullying is characterized by the following elements: voluntary act, the behavior is intentional and not accidental; repeated act, the behavior is repeated over time and not reduced to a single event; perception of damage by the victim, the victim suffers the damage inflicted; use of electronic devices, cyberbullying is carried out through the use of computers, cell phones, and other electronic means (**Ferrara et al., 2018**).

Moreover, revealing personal information without permission, blackmailing and threatening, also include some ways through which cyberbullying could take place. Although both forms of bullying known to have a harmful impact on victims, cyberbullying is a growing issue of concern due to increased accessibility and extensive use of digital technology (**Alabdour et al., 2019).**

Adolescents make up almost one-third of Egypt's population. Enrollment in all levels of education has increased for both girls and boys in the last decade, but slightly fewer girls than boys attend school at every level. (**UNFPA , 2023).** Adolescence starts with puberty, setting off a cascade of hormonal changes signaling the start of biological maturation and is characterized by major physical, psychological, and social changes. Adolescents involved in cyberbullying are highly prone to develop negative mental health and psychosocial issues such as anxiety, stress and depressive symptoms among cyberbullying victims. Additionally, significant emotional problems (**Westhoff et al., 2020**).

Self-esteem is the product of a lifelong developmental process. It determines the overall assessment of a person's value and can be considered an essential component of well-being. From this perspective, self-esteem may acquire a fundamental motivational function that can either activate or inhibit certain aspects of a person's developmental trajectories, with high levels of self-esteem operating as protective factors and low levels increasing vulnerability to peer aggression and mental health problems (**Lei et al., 2020).**

With regard to the associations between self-esteem and victimization/cyber victimization behaviors, results showed that students classified in the self-derogation profiles seemed to be more at risk of being involved in victimization/cyber victimization behaviors compared to those in the other profiles showing that lower levels of self-esteem are associated with higher risks of bullying and victimization (**Moriera et al., 2021).**

Emotion is fundamental to human experiences influencing our daily activities such as cognition, communication, learning, and decision making. For centuries, psychologists have tried to understand and define emotions. Recently, emotional intelligence has gained attention from scholars and practitioners **(Tuncdogan et al., 2017).**

Emotional intelligence, as an individual-level variable, means affective tendency to effectively use emotional information to achieve expected results. Members in an organization with high emotional intelligence can successfully affect the social environment at work and achieve high performance by regulating their emotions. Cyber bullying victimization is negatively correlated with, emotional intelligence. Low management and emotional control were associated with high levels of victimization, and that understanding the emotions of others was negatively related with participation in bullying. Therefore, those adolescents with better emotional abilities have fewer negative emotions related to the expression of aggression or anger **(Smith et al., 2018).**

Significance of the study:

The use of the internet for social media has steadily grown over time. As of January 2020, the estimated number of active social media users worldwide was 3.8 billion, reflecting an increase from the number of 3.4 billion in January 2019. Cyberbullying is more harmful than other types of violence because a negative post or comment can reach a limit-less number of social media users, thereby increasing the opportunity of prolonged exposure and permanency. Furthermore, younger generations currently tend to embrace the use of social media (**Oksenan et al., 2021**).

A term related to "cyber bullying" is "cyber victimization', which refers to the experience of being victimized through the use of electronic information on the internet. Cyber bullying is considered to be a form of violent behavior; therefore, it is expected that cyber bullying causes detrimental effects for both the victim and the perpetrator (**Lan et al., 2021).**

Due to the worldwide prevalence and the negative outcomes of cyber bullying, researchers have suggested prevention and intervention methods to keep adolescents from engaging in cyber bullying and strategies to help cyber victims cope with the negative impacts of cyberbullying. Examples of prevention methods include providing adolescents with empathy training and using technical coping strategies, such as blocking the cyber bully **(Del rey et al., 2019**). Therefore , the research program focused on increasing knowledge and teaching adolescents to use cyber applications to protect themselves from cyber bullying victimization.

Aim of the study:

The aim of this study was to assess the effectiveness of the training program on cyberbulleying victimization and its association with emotional intelligence and self esteem among adolescents.

Research hypothesis:

cyberbullying victimization among adolescents will be decreased after the intervention program which will improve their self esteem and Emotional Intelligence.

Subjects and Methods:

The methodology of the current study was presented under four designs: I. Technical design, II. Operational design, III. Administrative design, and IV. Statistical design

I. **Technical design:** includes a description of the research design, study setting, subjects, sample and tools for data collection.

A. **Research design:** A descriptive cross-sectional research design was used to carry out the first part of the study and a quasi experimental design (Pre – post) test was used to assess the effectiveness of the intervention on cyberbulleying victimization and its association with emotional intelligence among adolescents.

B. **Setting:** The study was conducted at the faculties of law and pharmacy at Zagazig university. Zagazig university, which is governmental university located in Sharkia governance (in the east of Egypt). Zagazig university is the 7th Egyptian university in terms of history and its creation and consists of around 20 colleges, these colleges are categorized into theoretical and practical colleges.

- **Subjects:** The study sample was 440 students from both law and pharmacy faculties distributed on the first and the second grade from each faculty
- **Inclusion criteria:** age: 18-20 years, agree to participate in the study, Free from any kind of disability, and free from chronic diseases altering psychological status.

Sample size calculation: The sample size is estimated to determine the prevalence of cyber bullying of 21.4% or more, with a 2% standard error and a 95% level of confidence. Using the single proportion sample size for dichotomous variables (Open-Epi software package), the estimated sample size is 406 adolescents. After adjustment for a non-response rate of about 10%, it was increased to 440 adolescents. The sample was large enough to assess their knowledge and misconceptions levels. Based on the prevalence sample, 90 adolescents, classified into 47 adolescents from the first and the second grade of the faculty of Law, Zagazig university and 43 adolescents from the first and the second grade of the faculty of Pharmacy, Zagazig university, were identified as victims of cyber bullying. They were included in the intervention study sample. This sample size was large enough to demonstrate statistically significant improvements in their self-esteem and emotional intelligence scores with a moderate effect size.

C. Sampling technique: Stratified multistage cluster sampling technique was used in the recruitment of the study subjects as follows:

Stage 1 (colleges): this was stratified into practical and theoretical colleges. One college was selected from each stratum

Stage 2 (years):

- Each of two colleges have two clusters representing the first and second grade
- The total sample (440) was equally divided into 110 students in each cluster

Stage 3

This stage involved selection of students according to above mentioned criteria

D. Tools for data collection:

Tool I. A self administered questionnaire sheet: consisted of the following parts

Part I : Which included three parts;

A- Personal characteristics of students: included open ended questions about age and closed ended questions about sex , place of residence, faculty name and grade number.

B- Socio demographic data about the family: included marital status of parents, father's education and job , mother' s education and job and the family socioeconomic status and open ended questions about father and mother age , number of family members and number of rooms

C- Information about social media use: included the methods and purpose of the using social media.

Tool II: A standardized cyberbulleying victimization scale for adolescents:

The scale is composed of 27 items categorized into three domains : verbal cyberbulleying victimization, sexual cyberbulleying victimization and social exclusion cyberbulleying victimization. Verbal cyberbulleying victimization domain consisted of 10 items , sexual cyberbulleying victimization domain consisted of 10 items and social exclusion cyberbulleying victimization domain was 7 items.

Scoring system : Participants responded to the items using a five point scale ranging from 1 (*Never*) to 5

(*very often*) the extent to which they had experienced the behavior described in the item over the last two months. Items were summed such that higher scores indicate greater cyberbulleying victimization.

Tool III: Rosenberg Self-Esteem Scale (SES):

A 10- item scale that measures global self-worth by measuring both positive and negative feelings about the self. All items are answered using a 4 point Likert scale format ranging from strongly agree to strongly disagree. **Scoring system:** The responses from "strongly agree" to "strongly disagree" were scored respectively from 4 to 1. The scores were reversed for negative items. The scores of the statements of each type were summed-up. The level of self-esteem was considered high if the total score was higher than 25, moderate if between 15 and 25, and low if less than 15 according to the tool guidelines.

Tool IV: Wung and law scale for emotional intelligence:

This scale consisted of 16 statements that described the youth emotional intelligence. The responses were on a 5 point Likert scale: strongly disagree, disagree , null , agree and strongly agree. **Scoring system:** Each item had 5 levels of answers from "strongly agree" to "strongly disagree." These were respectively scored from 5 to 1. The scores of the items of each dimension and of the total scale were summed-up and the total divided by the numbers of corresponding items giving mean scores. These scores were converted into a percent scores, and means and standard deviations were computed with higher scores indicating greater emotional intelligence. For the total scale was considered to be high if the percent score was 60% or more and low if less.

Reliability data

Scales	N of Items	Cronbach's Alpha
Self-esteem	10	0.68
Emotional intelligence	16	0.95
Victimization	27	0.92

II. Operational Design

It included the preparatory phase, content validity, pilot study and ethical consideration

A- The preparatory phase

It included reviewing of related literature and theoretical knowledge of various aspects of the study books, articles, internet periodicals and other magazines.

B-Content validity

The tools content was reviewed for clarity, relevance, comprehensiveness and understandability.

C-Pilot study

A pilot study was carried out on a sample of 44 adolescents from two faculties at Zagazig university. The aim was to test clarity of the instructions, the form of questions, comprehension of the items and to estimate the exact time required for filling the questions sheet. The participants involved in the pilot study were not included in the main study sample.

D- Field work:

The study was carried out through successive phases of assessment, planning, implementation and evaluation.

1- Assessment phase:

After securing all official permissions, the researcher first introduced himself and explained the purpose of the study to students at the sample to gain their cooperation and get the needed data from them. The time consumed for answering the study scales ranged from 30 – 45 minutes. This phase lasted for two months from October 2021 to December 2021.

2- Planning phase:

Based on the results obtained from the data analysis of the assessment phase, the researcher designed and scheduled the intervention sessions content according to the study aim of the training program. Teaching methods included training on mobile applications and group discussion. The program conducted on group basis, each group ranged between 4- 5 adolescents in the two faculties. The intervention content was as follows:

The 1st session

The researcher started the 1st session by dividing students into groups, each group consisted of five students. The researcher asked the students to conduct brain storming about different forms of cyberbullying victimization and taught them about applications and techniques to distinguish between real and fake internet content. **The researcher trained the students on:**

- Using safe parental browsing mode to protect themselves against unwanted web content
- Privacy mode through using common sense media website
- Policies of privacy on social media sites such as Facebook and Instagram

The 2nd session

The session focused on protection against different forms of cyberbullying victimization

The researcher trained the students on:

- Steps used to design safe password to ensure safe web browsing
- Examples of real and fake web content and how to distinguish between them safely

The 3rd session

The 3rd session focused on teaching students about safe using and browsing on the web

The researcher trained the students on:

- Safe using of personal email
- Safe using of social media applications
- Safe storing of personal data on the mobile and computer

The 4th session

The 4th session focused on teaching students about how to use smart browsing application properly They were trained to download and set up the application from the website

https://www.wagggs.org/en/what-we-do/surf-smart-20/

The 5th session:

The 5th session focused on teaching students about how to protect themselves from exposure to sexual abuse on the internet

3- Implementation phase:

The intervention was implemented in the form five sessions for small groups (4-5) of students in the two faculties and each session lasted 60-120 minutes. The length of each session was variable according to students responses and their active participation, as well as the time available and the content of each session. The researcher met the students at 10 sessions, 5 for each faculty from February 2022 to April 2022. The introductory session was used to present the aim and general objectives of the program, and set rules for leading the sessions. Then each session started by a summary about what was given through the previous session and the objectives of the new one, the session was aided by using practical activities as well as the program booklet

Methods of teaching:

- Training on mobile applications
- Group discussion
- Brain storming

Audiovisual aids:

- Mobile applications
- Data show

Evaluation methods:

- Feedback
- Practical training

4- Evaluation phase: Weekly contact was conducted with students to determine their experience with cyberbullying victimization and their ability to confront it. The researcher made contact with students to make sure that they use cyber-security applications. post test was conducted after the five sessions to determine cyberbullying victimization among students and its association with emotional intelligence and self esteem.

Ethical considerations

The study protocol was approved by the pertinent committees. The participants gave their informed consent to participate after being informed of the study purpose and of their right to refuse or withdraw at any time. The confidentiality of any obtained information was ensured.

III- Administrative design

Official permissions were obtained from the deans of faculties of law and pharmacy based on letters issued from the Dean of the faculty of Nursing, Zagazig university explaining the aim and the objectives of the study. The researcher met the general manager of each faculty and gave him a copy of the tool and formal letters.

IV- Statistical analysis

Descriptive statistics were used to present data as frequencies and percentages for qualitative, and means, standard deviations and medians for quantitative variables. Analytic statistics included chi-squared tests for comparing categorical variables, and Spearman's rank correlation for the relations among quantitative and ranked variables. Multiple regression analysis was used to identify the independent predictors of the scores of self- esteem, emotional intelligence, and cyber victimization. The level of statistical significance was set at p-value <0.05. All analyses were performed on SPSS 20.0 statistical package

Results

Table 1 reveals that 88.6% of the adolescents were below 20 years old with means ± SD of 18.7±0.7. Moreover, 64.1% of them were females. Moreover, 54.3% of the study sample belonged to theoretical faculty. Regarding students grade, 52.7% were at the first grade of the scholar year.

Table 2 clarifies that 60.9% of the study sample fathers age of the study sample ranged from 50 to less than 60 years with means ± SD of 52.6 ±5.4. Moreover 41.6% of the fathers had secondary education and 12.3 % of them had no education. Concerning the fathers' job, 45.2% of them were freelance. Regarding to the mothers of the study sample, 68.4% age ranged from 45 to less than 55 years with means ± SD of 47.4 ± 4.6 and 67.7% of them were employed. Moreover, 54.8% adolescents' parents were abroad, and 63.2% were not living together. Also, 79.3% of the parents had 2+ crowding index and 61.6% of family income was insufficient

Table 3 clarifies that 86.6 % of students in the study sample used social media and 65. 5% of them used smart phones. Moreover, 77.3% of the study sample used social media for entertainment.

Table 4 shows that 20.9 % of the study sample had high cyber victimization. Also, 68.4% of the study sample had average self esteem. Additionally, 50.0% of students in the study sample had high regulation of emotions. Meanwhile, 63.6% of the study sample had low Emotional Intelligence.

Table 5 Presents Correlations between students' scores of cyber victimization, self-esteem and emotional intelligence and their characteristics: It indicates that statistically significant positive correlations were found between cyberbullying victimization and crowding index , no of media used and no of objectives of media use (r = .102 , r= .216 , r =.393) respectively.

On the other hand, there were statistically significant negative correlations between cyberbullying victimization and father age and mother age (r =-.170, r =-.123) respectively. A statistically significant positive correlations was found between adolescents' self esteem and their mothers' age, mothers' educational level, and fathers' education level (r = .099, r= .154 , r =.111) respectively. On the other hand, there were statistically significant negative correlations adolescents self esteem and their age and educational year (r =-.293, r=-.244) respectively.

The same table clarifies that there was statistically significant positive correlations between adolescents' emotional intelligence and family income, mother age and mother educational level (r = .096, r = .160, r= .174) respectively.

On the other hand, there were statistically significant negative correlations between adolescents emotional intelligence and their age, school year, no of media used and no of objectives of media used (r =-.248, r =-.-252 , r= -100, r=-154) respectively.

Table 6 illustrates that, statistically significant difference improvement in the results of regulation of total victimization was found throughout the intervention phases (pre, post test) $p<0.001$.

Table 7 indicates pre-post –intervention changes in students' self esteem. This table clarifies that the percentage of students who had average self esteem was 27.8% in pre intervention which increased to 80.0% at post intervention.

Table 8 illustrates that the total emotional intelligence was improved after the intervention program ($p<0.001$)

Table 9 indicates that best fitting multiple linear regression model for the effect of the intervention on the cyber victimization score. It indicates that father education and intervention program were statistically significant positive predictors with cyber victimization. The regression model explains 0.88 % of the variation in cyber victimization as indicated by r- square value.

Table 10 indicates that best fitting multiple linear regression model for the effect of the intervention on the self-esteem score. It indicates that father education, crowding index and intervention were statistically significant positive predictors with self esteem. The regression model explains 0.57 % of the variation in self esteem as indicated by r- square value.

Table 11 indicates that best fitting multiple linear regression model for the effect of the intervention on the emotional intelligence score. It indicates that father education and intervention were statistically significant positive predictors with emotional intelligence. The regression model explains 0.68 % of the variation in emotional intelligence as indicated by r- square value

Discussion

The current study results indicated that the majority of the adolescents were using social media regularly, it might be due to the availability of easy and modern technologies of communication as face book, WhatsApp and Instagram and the current generation prefers to use it. Also, the present findings indicated that the reason for using the social media among the majority of adolescents was entertainment. At the same line, the study conducted by **Ngata, 2020** in his study found that the majority targeted adolescents used discussion forums (68%) on social media. Most often, social media was included as part of daily activities (64%). On the contrary, the study conducted by **Tan et al. 2018** found only 7% of the adolescents in their study used social media regularly, it might be due to heavy university duties.

Regarding the prevalence of cyberbullying victimization, the present study results revealed that more than twenty percent of the adolescents experiencing high cyberbullying victimization scores. This might be due to lack of information about electronic security, inability to protect themselves from electronic bullying, misuse of the Internet and behaviors such as publishing personal news, photos, family information that might lead to exploitation and refusal to tell about such sensitive topic. The present study results in accordance with the study conducted by **Arafa & Senosy (2017)** in Egypt who found almost half of the students (48.2%) in their study reported experiencing cyberbullying victimization in the past 6 months.

Regarding the prevalence of self esteem, the present study indicated that self esteem of 94.8% of adolescents ranged between below and average self esteem. This might be due to poor relations with family or lack of the sense of achievement after joining the university. On the same way, study conducted by **palemeriti et al. (2022)** found the majority of adolescents in their study had low self esteem.

Regarding the prevalence of emotional intelligence, the current study results indicated that nearly two thirds of the adolescents had low emotional intelligence scores. It might be due to cultural and familial factors. On the same vein, a study done by **Mendez et al. (2022)** in Italy indicated that the majority of students in the study sample had low emotional intelligence scores. Conversely, study published by **Martínez-Monteagudo et al. (2019)** found high emotional intelligence scores. This might be due to high standards of living and education.

The current study results revealed that there was positive correlation between emotional intelligence and self esteem as high self esteem positively reflected on improved emotional intelligence. On the same vein, a study conducted in India by **Mérida-López et al. (2017)** found positive relation between self esteem, emotional intelligence among their studied subjects.

On the other hand, the current study findings indicated that there was negative correlation between emotional intelligence and cyberbullying victimization and between self esteem and cyber bullying victimization and cyberbullying victimization. While the causal link is not clear, some authors suggest that victims of bullies who use the Internet to harass and mock may be more likely to develop low self-esteem which, in turn, can have severe consequences for young people's well-being and psychological adjustment (**Palermiti et al., 2017**),

In agreement with the aforementioned result, **Extremera et al. (2018)** study which found negative relation between cyberbullying victimization and self esteem. Additionally, study conducted by **Mendez et al. (2019)** found negative relation between cyberbullying victimization and emotional intelligence. Moreover, study conducted by **Ak et al. (2015)** shown that cyberbullying victimization was strongly associated with increased tension, anger and decreased self esteem among the study sample.

Concerning the effect of the intervention program on cyberbullying victimization and its association with self esteem and emotional intelligence, the study findings demonstrated that there were statistically significant difference in cyberbullying victimization after conducting the program. That might be due to skills acquired during training sessions which might improved adolescents awareness and coping with cyberbullying victimization.

On the same vein, **Kutok et al. (2021)** in the United States found decreased level of cyberbullying victimization among adolescents after intervention program. Similar to the current study results, the study conducted by **Sorrentino et al. (2022)** in Argentina found decreased level of cyber victimization after conducting the program

Moreover, study conducted by **Bonell et al. (2020)** which focused on training courses provided in the school which proved to reduce the prevalence of cyber bullying victimization among adolescents. Similar results were found in a study conducted by **Zafra et al. (2021)** which focused on interventions to improve awareness on cyberbullying victimization associated with emotional education among the study sample.

Additionally, the study findings demonstrated that there were statistically significant different changes in emotional intelligence scores among adolescents associated with improvement in cyberbullying

victimization levels. Victims of cyberbullying report more social and emotional problems, such as isolation and emotion regulation problems, than victims of traditional bullying (**Ak et al., 2015**). Research has also shown that cyberbullying has negative consequences for both the physical health and psychological adjustment of victims **(Tsaousis, 2016).**

Moreover, the study results indicated that there was statistically improvement in self esteem associated with decreased level of cyberbullying victimization after conducting the program. On the same way, a study conducted by **Dat et al. (2022)** in Japan which indicated improved level of self esteem after conducting the program by the researchers.

On the other hand, study conducted by **Schultze-Krumbholz1 et al. (2015)** indicated that there was no correlation found between intervention program and cyberbullying victimization among adolescents. Additionally, a study conducted by **Martins et al. (2018)** in Canada found no statistically significant changes in emotional intelligence scores among adolescents after the intervention program. Moreover, a study conducted by **Moffitt et al. (2018)** indicated no change in self esteem level after the intervention which might be due to lack of interest among the study sample or small sample size,

Regarding statistically significant independent predictors of cyberbullying victimization, emotional intelligence and self esteem among adolescents, the present study findings represented that the father education and intervention were significant independent positive predictors of cyberbullying victimization, self esteem and emotional intelligence among adolescents. That might be because of high education level might be associated with better relationship between fathers and adolescents which reflect positively on their self esteem and emotional intelligence.

The study findings were on the same line with a study conducted by **Liu et al. (2023)** in England which found that family education has strong effect on self esteem of adolescents. Additionally, a study conducted by **Fouad et al. (2018**) in Egypt indicated that intervention program was positive predictor of self esteem among the sample. Regarding emotional intelligence, these results were on the same line with a study conducted by **Alharbi (2018) in Saudi Arabia** which indicated that family education was positive predictor of emotional intelligence among the sample.

On the other hand, a Study conducted b**y Rezaei-Dehaghan et al. (2015**) in Iran which found no correlation between family education and self esteem of adolescents. Additionally, the present study findings represented that the crowding index was a significant independent positive predictor of self esteem of adolescents. That might be due to lack of privacy and poor living standards.

Conclusion:

The training program affect positively throughout decreasing the cybervictimization and improve the adolescents self esteem and emotional intelligence

Recommendations: Based on the results of the present study, the following recommendations are proposed:

1. Training interventions to teach adolescents about the protective actions against the cyberbullying.
2. Follow up programs for adolescents experienced cyberbullying victimization

3. Further research is suggested to determine the effects of cyberbullying victimization on adolescents' health

Results

Table 1: Demographic characteristics of students in the study sample (n=440)

Demographic characteristics	Frequency	Percent
Age:		
<20	390	88.6
20+	50	11.4
Mean±SD	18.7±0.7	
Gender:		
Male	158	35.9
Female	282	64.1
Residence:		
Rural	239	54.3
Urban	201	45.7
Faculty:		
Practical	201	45.7
Theoretical	239	54.3
Scholar year:		
1	232	52.7
2	208	47.3

Table 2: Parents' characteristics of students in the study sample (n=440)

Parents' characteristics of students domains	Frequency	Percent
Father age:		
<50	121	27.5
50-	268	60.9
60+	51	11.6
Mean±SD	52.6±5.4	
Father education:		
▪ None	54	12.3
▪ Basic	112	25.5
▪ Secondary	183	41.6
▪ University	91	20.7
Father job:		
▪ Employee	124	28.2
▪ Worker	117	26.6
▪ Freelance	199	45.2
Mother age:		
▪ <45	104	23.6
▪ 45-	301	68.4
▪ 55+	35	8.0
Mean±SD	47.4±4.6	

Mother education:		
▪ None	23	5.2
▪ Basic	126	28.6
▪ Secondary	150	34.1
▪ University	141	32.1
Mother job:		
▪ Employed	298	67.7
▪ Housewife	142	32.2

Table 2 continued

	Frequency	Percent
Parents:		
▪ Divorced	32	7.3
▪ Widow	5	1.1
▪ Abroad	241	54.8
▪ Married	162	36.8
Parents co-living:		
▪ No	278	63.2
▪ Yes	162	36.8
Crowding index:		
▪ <2	91	20.7
▪ 2+	349	79.3
Mean±SD	2.4±0.7	
Family income:		
▪ Sufficient	55	12.5
▪ Insufficient	271	61.6
▪ Saving	114	25.9

Table 3 : Use of social media among the study sample

Use of social media domains	Frequency	Percent
Use social media:		
No	59	13.4
Yes	381	86.6
Media used:		
Personal computer	59	13.4
Smartphone	288	65.5
Tablet	58	13.2
All	15	3.4
No. of media used:		
Range		0-2
Mean±SD		1.0±0.5
Median		1.0
Purpose of use:		

Study	197	44.8
Entertainment	340	77.3
No. of purposes:		
Range		0-2
Mean±SD		1.25±0.7
Median		1.0

Table4: Prevalence of self-esteem, emotional intelligence, and cyber victimization among students in the study sample (n=440)

: Prevalence of self-esteem, emotional intelligence, and cyber victimization	**Frequency**	**Percent**
Victimization (High):		
Verbal	96	21.8
Visual/sexual	96	21.8
Social exclusion	111	25
Total victimization:		
High	92	20.9
Low	348	79.1
Self-esteem		
Below average	116	26.4
Average	302	68.4
High	22	5.0
Emotional intelligence (EI):		
High:		
Self-emotions appraisal	147	33.4
Others-emotions appraisal	145	33.0
Use of emotions	179	40.7
Regulation of emotions	220	50.0
Total EI:		
High	160	36.4
Low	280	63.6

Table 5 : Correlations between students' scores of self-esteem, emotional intelligence, and cyber victimization and their characteristics.

Personal characteristics	Spearman's rank correlation coefficient		
	Self-esteem	Emotional intelligence	Cyber victimization
Age	-.293**	-.248**	.073
School year	-.244**	-.252**	.047
Father age	.071	.077	-.170**
Father education level	.111*	.078	.031
Mother age	.099*	.160**	-.123**
Mother education level	.154**	.174**	-.041
Crowding index	-.021	-.013	.102*
Family income	.046	.096*	-.093
No. of media used	-.023	-.100*	.216**
No. of objectives of media use	-.052	-.154**	.393**

(*) Statistically significant at p<0.05 *(**) Statistically significant at p<0.01*

Table 6: Pre-post-intervention changes in students' cyber victimization exposure

Cyber victimization exposure	TIME				X^2 test	p-value
	Pre (n=90)		Post (n=90)			
	No.	%	No.	%		
Verbal:						
▪ High	84	93.3	4	4.4		
▪ Low	6	6.7	86	95.6	142.29	<0.001*
Visual/sexual:						
▪ High	85	94.4	1	1.1		
▪ Low	5	5.6	89	98.9	157.11	<0.001*
Social exclusion:						
▪ High	86	95.6	1	1.1		
▪ Low	4	4.4	89	98.9	160.73	<0.001*
Total victimization:						
▪ High	86	95.6	0	0.0		
▪ Low	4	4.4	90	100.0	164.68	<0.001*

(*) Statistically significant at p<0.05

Table 7 : Pre-post-intervention changes in students' self-esteem

students' self-esteem	TIME				X^2 test	p-value
	Pre (n=90)		Post (n=90)			
	No.	%	No.	%		
Self-esteem:						
▪ Below average	65	72.2	2	2.2		
▪ Average	25	27.8	72	80.0	98.01	<0.001*
▪ High	0	0.0	16	17.8		

(*) Statistically significant at p<0.05

Table 8: Pre-post-intervention changes in students' emotional intelligence

students' emotional intelligence	TIME				X^2 test	p-value
	Pre (n=90)		Post (n=90)			
	No.	%	No.	%		
Self-emotions appraisal:						
▪ High	6	6.7	48	53.3		
▪ Low	84	93.3	42	46.7	46.67	<0.001*
Others-emotions appraisal:						
▪ High	5	5.6	60	66.7		
▪ Low	85	94.4	30	33.3	72.84	<0.001*
Use of emotions:						
▪ High	5	5.6	52	57.8		
▪ Low	85	94.4	38	42.2	56.71	<0.001*
Regulation of emotions:						
▪ High	6	6.7	59	65.6		
▪ Low	84	93.3	31	34.4	67.64	<0.001*
Total EI:						
▪ High	4	4.4	58	64.4		
▪ Low	86	95.6	32	35.6	71.74	<0.001*

(*) Statistically significant at p<0.05

Table 9: Best fitting multiple linear regression model for the for the effect of the intervention on the self-esteem score

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	-2.10	2.09		-1.004	0.317	-6.24	2.03
Father education	0.59	0.30	0.10	1.967	0.051	0.00	1.19
Crowding index	1.15	0.54	0.11	2.142	0.034	0.09	2.20
Intervention	9.12	0.61	0.74	15.030	<0.001	7.92	10.32

r-square=0.57

Model ANOVA: F=77.57, p<0.001

Variables entered and excluded: age, gender, residence, faculty, year, father age, mother age and education, income, parents co-living

Table 10 : Best fitting multiple linear regression model for the effect of the intervention on the emotional intelligence score

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	.65	.90		.727	.468	-1.12	2.43
Father education	.46	.18	.11	2.549	.012	.10	.81
Intervention	6.99	.36	.82	19.172	<0.001	6.27	7.71

r-square=0.68

Model ANOVA: F=187.04, p<0.001

Variables entered and excluded: age, gender, residence, faculty, year, father age, mother age and education, crowding index, income, parents co-living

Table 11 : Best fitting multiple linear regression model for the effect of the intervention on the victimization score

	Unstandardized Coefficients		Standardized Coefficients	t-test	p-value	95% Confidence Interval for B	
	B	Std. Error				Lower	Upper
Constant	6.26	0.15		41.61	<0.001	5.97	6.56
Father education	-0.07	0.03	-0.06	-2.32	0.02	-0.13	-0.01
Intervention	-2.18	0.06	-0.94	-35.72	<0.001	-2.30	-2.06

r-square=0.88

Model ANOVA: F=640.62, p<0.001

Variables entered and excluded: age, gender, residence, faculty, year, father age, mother age and education, crowding index, income, parents co-living

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