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ORIGINAL ARTICLE

Prevalence of Adverse Childhood Experiences and Their Relationship with Self-esteem Among School-Age Children in Jordan

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Abstract

This study aimed to assess the prevalence of adverse childhood experiences and their relationship with self-esteem among secondary school students in Jordan. A cross-sectional, retrospective design was utilized using a convenience sample of 559 secondary school children (grades 7–11). Results showed that among the participating students, emotional abuse was the most commonly reported type of abuse (59.6%), followed by household violence (52.2%), bullying (44.7%), physical abuse (31.7%), emotional neglect (26.3), physical neglect (12.7%), and parents' separation (5.2%). Male students reported significantly more physical abuse than female students (37.5% vs 26.2%, $p < 0.001$), and significantly more physical neglect than female students (18.2% vs 7.6%, $p < 0.001$). However, female students reported significantly more household violence than male student (60.0% vs 43.9%, $p < 0.001$). Self-esteem scores were lower for students who reported physical abuse ($d = 0.38$, $p < 0.001$), household violence ($d = 0.25$, $p < 0.003$), emotional neglect ($d = 0.45$, $p < 0.001$), physical neglect ($d = 0.58$, $p < 0.001$), and bullying ($d = 0.29$, $p = 0.001$). Self-esteem was best predicted by physical abuse ($\beta = -0.114$, $p = 0.009$), emotional neglect ($\beta = -0.169$, $p < 0.001$), and physical neglect ($\beta = -0.148$, $p < 0.001$). Efforts should be exerted to prevent violence against children. National programs and community awareness campaigns should focus on the violence's detrimental effects on children.

Keywords Adverse childhood experiences (ACEs) · Child abuse · Child neglect · Self-esteem

Introduction and Background

Adverse childhood experiences (ACEs) are traumatic events that occur during childhood and are linked with an increased risk of health and behavioral problems [1]. These adverse experiences include child abuse, neglect, forms of violence, or substance abuse [1]. ACE is a term used to describe all types of abuse, neglect, and any traumatic experiences that occur to children under 18 years [2].

A systematic review of violence against children (2–17 years) from 96 countries around the world showed that over 1 billion children experienced violence in the year 2014–2015 only, with prevalence rates of 60% in North America and Latin America, 70% in Europe, and 80% in Africa and Asia [3]. Regardless of the child's age, violence against children has many short- and long-term physical and psychological impacts on the child's growth and development [3]. The short-term impacts of ACEs may include physical harm, significant difficulties in the school environment, struggle with cognitive thinking, behavioral problems like aggressive behavior, and a higher risk of failure at school [4, 5]. The long-term behavioral impacts include aggression, smoking initiation, alcohol addiction, maladaptive problem-solving, and psychological impacts such as depression and self-esteem problems [6]. In addition, ACEs have a significant impact on the psychological well-being of children of all age groups, which may lead to lifelong

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behavioral problems such as self-injury, suicidal attempts, sexual assault, and social isolation [7].

Many forms of ACEs have been reported in the Arab world, including family child abuse and neglect [8]. However, reports on these types of violence are generally lacking. In Saudi Arabia, several forms of ACEs have been reported and linked to many physical, mental, and behavioral health problems in adulthood. The prevalence of ACEs is higher among men than among women [9]. Similarly, many forms of abuse have been reported in Kuwaiti governmental schools [10].

Various types of child abuse have negative effects on the development of adolescents, mainly by lowering their self-esteem [11], which is linked to various negative consequences, including depression, anorexia nervosa, self-inflicted injuries, impaired brain development, and suicide [12, 13]. Another study among students reported a negative correlation between self-esteem and all forms of ACEs [12–14]. Also, there was a strong correlation between all ACEs with aggressive behavior [14]. Another study in Tanzania showed a significant positive correlation between psychological maltreatment and self-esteem [15].

A Kuwaiti study examined the prevalence of physical, psychological, and sexual abuse among a nationwide sample of Arab high school students and their association with family characteristics, anxiety, depression, self-esteem, and quality of life [10]. The results showed that females had a higher abuse score than males and a positive and significant relationship between total psychological, physical abuse scores and anxiety and depression scores. Also, the relationship between abuse and self-esteem scores was negative but highly significant [10]. In addition, many studies in different countries have shown that bullying behavior among school students had a negative effect on their self-esteem level [16–19].

Childhood experiences of physical and emotional neglect also affect self-esteem levels. According to previous studies, physical and emotional neglect affect the formation of self-concept and self-representation, which eventually impact self-esteem [20, 21]. The use of violence or abuse as a parenting style method affects self-esteem by decreasing family relationships, self-confidence, psychological support, emotional interaction between family members, and parental feedback [22–26].

Jordan is no exception, as many forms of physical and verbal abuse are common maltreatment behaviors. Reports published by Jordan's statistics department show that Jordanian children are exposed to violence as a method of discipline and a parenting style [27]. Psychological aggression and physical punishment are used by parents for parenting or disciplining their children [27]. Sexual abuse also exists in Jordan. However, the available data are insufficient because victims often do not report being sexually abused to avoid the shame and stigma associated with this type of abuse [28]. Studies in the literature have reported the prevalence of ACEs in many countries worldwide. Although these studies help assess and document the size of the problem and the adverse effects of ACEs, there is a lack of knowledge regarding the prevalence and significance of ACEs. Also, in Jordan, the results of a comprehensive study revealed a high prevalence of child abuse and its negative consequences and a lack of awareness among people of child abuse and its impacts [29]. The present study aimed to assess the prevalence of adverse childhood experiences and their relationship with self-esteem among secondary school children.

Methods

A cross-sectional, retrospective design was used to assess the impact of the history of ACEs on self-esteem among secondary school children (i.e., grades 7, 8, 9, 10, and 11) in Irbid, in the North Region of Jordan.

Setting

This study was conducted in secondary schools in Irbid, Jordan. Participating schools were randomly selected from a list of governmental public schools after being stratified for gender. Twelve of the 169 schools scattered throughout Irbid's first district were selected. These schools were divided into two categories according to the gender of their students (six schools for boys and six for girls). Each of these schools had between 400 and 600 students.

Population

The target population was all 7–11th grade students in governmental public schools in Irbid. After randomized stratified selection; the accessible population was the students in the selected schools. The 169 schools were stratified depending on the gender of the students (70 male schools and 99 female schools). Six schools were randomly selected from each stratum, resulting in six all-female schools and six all-male schools. The inclusion criteria for the students were all public-school students who agreed to participate, were physically and mentally stable, and were not suffering from any mental or psychological diseases.

Sample and Sampling Procedure

All secondary school Jordanian students in Irbid were potential participants in this study. A convenience sampling procedure was used to recruit participants from the selected schools. Equal numbers of all-female and all-male schools were chosen to ensure equal distribution of males and

females. Initially, a list of all governmental public schools, including 6th to 11th-grade schools, was obtained from the first educational directorates in the Irbid governorate. Of the 169 governmental schools in the first directorate Irbid, 70 were all-male schools, and 99 were all-female. In the second stage, a list of an equal number of all-female and all-male schools was randomly selected, with 12 schools in total. All 1092 students in grades 7–11 in the selected schools were invited to participate in the study. Students who signed the assent form and whose parents signed the consent form were included. In total, 559 students returned parent-signed informed consent forms and were included in the final sample.

Sample Size Calculation

Sample size calculation was based on the minimum required total sample size and per-group sample size for a two-tailed t-test study. Using Cohen's power analysis [30], the value of *ES* in a two-group test of mean differences is estimated at 0.50 for medium effects, with an α value of 0.05 and power of 0.80, the n (number of participants per group) = 64. The minimum total sample size was 128. In this study, the final sample size was 559 participants.

Instruments

A self-administered questionnaire in Arabic was used. The questionnaire consisted of (1) an assent form and a consent form; (2) questions related to the student's biographic/demographic data (i.e., name, age, gender, date of birth, school name, etc.); (3) a modified Adverse Childhood Experiences International Questionnaire (ACE-IQ) [31]; and (4) the Rosenberg Self-Esteem Scale [32].

Adverse Childhood Experiences International Questionnaire

The Adverse Childhood Experiences International Questionnaire (ACE-IQ) was developed by the WHO to assess intensive and frequently occurring sources of stress that may face children, including abuse, neglect, and violence by parents or caregivers, peer violence, witnessing of community violence, and exposure to collective violence [31]. The tool items cover various aspects, including demographic information, marital status, relationship with parents/guardians, family environment, peer violence, witnessing of community violence, and exposure to war/collective violence. In this study, we included certain parts and excluded others based on their suitability for the targeted age group. The first part was related to demographics and included questions about gender, age, educational status, living area, and occupation. The second part was related to the student's relationship with his/her parents/guardians and contained five questions. The third part was related to the family environment. It contained 16 questions, five regarding the family members living with the participant, three regarding any physical violence experienced by a family member, and four regarding physical violence with verbal violence. The fourth part was related to peer violence and included three questions about participant engagement in bullying or physical fighting.

Although this tool was designed to be administered for adults aged 18 years or over, it was recently tested and found to be appropriate for adolescents [33]. Although the English version was valid and reliable, the content validity of the translated Arabic version was also assessed.

The translated Arabic version of ACE-IQ was used. The WHO guidelines [34] were used to translate and adapt the instruments. Two bilingual experts used translations and back-translations to ensure the conceptual and cross-cultural equivalence.

Rosenberg's Self-esteem Scale

Arabic translated version of Rosenberg's Self-Esteem Scale was used to measure self-esteem [8]. The scale consists of 10 questions that measure both positive and negative feelings. All items are answered using a 4-point Likert scale ranging from strongly agree to strongly disagree. Five items were reversed scores (items 2, 5, 6, 8, 9). Scores ranged from 10 to 40. Higher scores indicate higher self-esteem. Kazarian [8] conducted a study with 59 participants and found internal consistency for the Arabic Rosenberg self-esteem scale $\alpha = 0.71$. Coefficient alpha = 0.89, reported by Rosenberg [35]. For this study, the Cronbach alpha of the Rosenberg self-esteem scale was 0.701.

Pilot Study

A pilot study was conducted among 20–30 boys and girls from the selected schools. The participants were asked to fill out the questionnaire to determine its cultural sensitivity, required completion time, ease of completion, and readability. Two classes from each grade were randomly selected from two schools, one for boys and one for girls, and the students and their parents were asked to read the participant information sheet and complete the consent form. Ten to fifteen minutes was the time needed to complete the questionnaire. Almost all of the students agreed that the questionnaire had cultural sensitivity and that all items were clear and easy to understand.

Data Collection

After obtaining ethical approvals, the researcher met with the headmasters of the selected schools to explain the study

aims and data collection procedure. The students were interviewed in their classrooms, and each student received two copies of the consent form to be completed by the student and his/her guardian/parent. The researcher explained the research objectives and how to participate in the research and the participants' rights of participation and the confidentiality of the collected data.

After obtaining approval from the parents and students, the questionnaire was distributed to the students inside their classrooms. The researcher and research assistant explained the contents of the questionnaire and how to complete it. Each student placed the signed consent forms and completed questionnaire in a file, and a code was created for each student to preserve the student's privacy.

Ethical Considerations

Approvals were obtained from the Jordan University of Science and Technology research committee and the Ministry of education. The ethics committee in the Ministry of Education evaluated the questions regarding all types of ACEs and asked to remove the six categories, namely:

1. Contact sexual abuse
2. Alcohol and/or drug abuser in the household.
3. Incarcerated household member
4. Someone chronically depressed, mentally ill, institutionalized or suicidal.
5. Community violence
6. Collective violence.

After obtaining ethical approval from all involved parties, students who assented to participate in the study received a cover letter explaining the purpose and outcomes of the study. Parental written consent was also obtained. The students had the right to refuse to participate or withdraw from the study at any time without providing any reasons. The students were also assured that all the information they provided would be kept confidential and that their responses would be reported collectively and not as individual responses. Both parents and students who agreed to participate in the study signed a written consent form.

Statistical Analysis

The Statistical Package for the Social Sciences (IBM SPSS Statistics for Windows), version 26 (SPSS Inc., Chicago, IL, USA), was used to analyze the data. Descriptive statistics (i.e., means, standard deviations, and percentages) were used to assess the students' demographics, the prevalence of ACEs, and their level of self-esteem. Independent samples t-test was used to determine the association between gender and level of self-esteem and the differences in self-esteem based on ACEs. Further, the Chi-squared test was used to assess the differences in ACEs based on gender. Multiple Linear Regression analysis was used to determine factors predicting self-esteem from ACEs categories. A p-value of < 0.05 was set as significant.

Results

Characteristics of the Participants

Table 1 displays the characteristics of the students. Out of the 1092 students approached, the parents of only 559 students signed the informed consent forms, resulting in a response rate of approximately 51%. Of the 559 students, 269 (48.1%) were males, and 290 (51.9%) were females. The majority of the students were Jordanian (89.4%, n = 500), and the students were in grades 7–11.

The Prevalence of Adverse Childhood Experiences by Gender

The WHO guide for coding and scoring system to analyze ACE-IQ was used in this study [36]. The binary version analysis method was adopted to ascertain the most appropriate approach to determine all participants' final ACE scores. The questions from the ACE-IQ about childhood experience have been sorted into categories: emotional abuse, physical abuse; violence against household members; one or no parents, parental separation or divorce; emotional neglect; physical neglect; bullying, and community violence. To calculate the ACE score using the binary version, the variables were re-codded as follows: If the participant answered in the affirmative (whether once, a few times, or many times), then that counts as a YES, and so that response should be 1, and if the participants answered with never or refused, that counts as NO answer and so 0 placed as a response.

Table 2 presents the prevalence of ACE for all participants across their genders. About 333 (59.6%) students

Table 1 Characteristics of the Participants (N = 559)

Item	Category	*n* (%)
Gender	Male	269 (48.1)
	Female	290 (51.9)
Nationality	Jordanian	500 (89.4)
	Syrian	59 (10.6)
Grade	7th grade	88 (15.7)
	8th grade	120 (21.5)
	9th grade	98 (17.5)
	10th grade	159 (28.4)
	11th grade	94 (16.8)

Table 2 Prevalence of ACEs according to gender (N = 559)

Variable	Category	Male n (%) *n = 269	Female n (%) * n = 290	Total (%)	*p*-value [a]
Emotional abuse	Yes	150 (55.8)	183 (63.1)	333 (59.6)	0.085
	No	119 (44.2)	107 (36.9)	226 (40.4)	
Household violence	Yes	118 (43.9)	174 (60.0)	292 (52.2)	< 0.001
	No	151 (56.1)	116 (40.0)	267 (47.8)	
Bullying	Yes	122 (45.4)	128 (44.1)	250 (44.7)	0.799
	No	147 (54.6)	162 (55.9)	309 (55.3)	
Physical abuse	Yes	101 (37.5)	76 (26.2)	177 (31.7)	0.005**
	No	168 (62.5)	214 (73.8)	382 (68.3)	
Emotional neglect	Yes	73 (27.1)	74 (25.5)	147 (26.3)	0.701
	No	196 (72.9)	216 (74.5)	412 (73.7)	
Physical neglect	Yes	49 (18.2)	22 (7.6)	71 (12.7)	< 0.001
	No	220 (81.8)	268 (92.4)	488 (87.3)	
Parent separation/ divorce	Yes	12 (4.5)	17 (5.9)	29 (5.2)	0.568
	No	257 (95.5)	273 (94.1)	530 (94.8)	

*Cell entries for males and females are percent for gender. [a]χ^2 test for independence. *$p < 0.05$, **$p < 0.01$

reported having been emotionally abused, of whom 150 (55.8%) were males and 183 (63.1%) were females. More than half (n = 292, 52.2%) reported having experienced household violence, and almost 250 (44.7%) of the students reported having experienced bullying. Further, 177 (31.7%) of all participants reported being physically abused. More students reported having experienced emotional neglect 147 (26.3%) than physical neglect 71 (12.7%). Only 29 (5.2%) students reported having experienced the separation/divorce of their parents (Table 2).

The Chi-squared test results revealed significant gender differences in ACEs among the students. Female students (60.0%) were more than male students (43.9%) to report household violence [$X^2(1) = 14.55$, $p < 0.001$]. However, male students (37.5%) were more than female students (26.2) to report physical abuse [$X^2(1) = 8.29$, $p = 0.005$]. Compared to females, male students were also, more to report physical neglect (18.2% vs 7.6%) [$X^2(1) = 14.22$, $p < 0.001$] (Table 2).

The Prevalence of Adverse Childhood Experiences by Grades

Table 3 presents the significant differences in ACEs across grades. The results of the chi-square test showed that there was a significant difference between students in reporting emotional abuse in different grades [$X^2(4) = 22.4$, $p < 0.001$], students in 9th grade were different from others in reporting emotional abuse ($p = 0.002$) as indicated by post hoc test. Students in 7th grade were also different from others in reporting household violence (post hoc $p < 0.005$), $X^2(4) = 18.73$, $p = 0.001$. Moreover, 8th-grade students were more than others to report bullying (post hoc $p = 0.002$), [$X^2(4) = 12.67$, $p = 0.013$].

Students' Self-esteem According to Gender

The mean self-esteem score among the students was 30.75 (SD = 4.123), ranging from 15 to 40. Both males and females have nearly the same mean scores (30.47 vs 31.01), and there were no significant differences [$t(557) = -1.56$, $p = 0.118$].

Differences Between Students' Self-esteem Based on Adverse Childhood Experiences

The independent samples t-test revealed significant differences between mean scores of self-esteem and ACEs categories, namely physical abuse, household violence, emotional neglect, physical neglect, and bullying. Self-esteem scores were lower among students who were reported to have experienced physical violence, household violence, emotional and physical neglect, and bullying (Table 4).

The Effect of Adverse Childhood Experiences on Self-esteem Among Students

Multiple linear regression analysis was conducted to examine the effect of adverse childhood experiences (i.e., physical abuse, emotional abuse, household violence, bullying, physical neglect, emotional neglect, parent separation/divorce) on self-esteem. Assumptions for multicollinearity showed that predictors were not highly correlated ($r < 0.7$). The normal *p–p* plot showed the linear correlation between the predictors and the outcome variable. The results showed that the variables entered into the model were statistically significantly predicted the level of self-esteem [$F(7, 551) = 9.11$, $p < 0.001$] and explained only 10.4% of the variance in self-esteem score ($R^2 = 0.104$). Physical abuse ($\beta = -0.114$, $p = 0.009$),

Table 3 ACEs differences across grades

Grade	Physical abuse *n* (%)		Emotional abuse *n* (%)		Household violence *n* (%)		Parents separation *n* (%)		Emotional neglect *n* (%)		Physical neglect *n* (%)		Bullying *n* (%)	
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
7th	58 (65.9)	30 (34.1)	46 (52.3)	42 (47.7)	54 (61.4)	34 (38.6)	83 (94.3)	5 (5.7)	61 (69.3)	27 (30.7)	71 (80.7)	17 (19.3)	53 (60.2)	35 (39.8)
8th	82 (68.3)	38 (31.7)	49 (40.8)	71 (59.2)	59 (49.2)	61 (50.8)	115 (95.8)	5 (4.2)	78 (65.0)	42 (35.0)	108 (90.0)	12 (10.0)	52 (43.3)	68 (56.7)
9th	74 (75.5)	24 (24.5)	53 (54.1)	45 (45.9)	56 (57.1)	42 (42.9)	93 (94.9)	5 (5.1)	76 (77.6)	22 (22.4)	81 (82.7)	17 (17.3)	65 (66.3)	33 (33.7)
10th	102 (64.2)	57 (35.8)	50 (31.4)	109 (68.6)	64 (40.3)	95 (59.7)	148 (93.1)	11 (6.9)	120 (75.5)	39 (24.5)	141 (88.7)	18 (11.3)	88 (55.3)	71 (44.7)
11th	66 (70.2)	28 (29.8)	28 (29.8)	66 (70.2)	34 (36.2)	60 (63.8)	91 (96.8)	3 (3.2)	77 (81.9)	17 (18.1)	87 (92.6)	7 (7.4)	51 (54.3)	43 (45.7)
Total (%)	382(68.3)	177 (31.7)	226 (40.4)	333 (59.6)	267 (47.8)	292 (52.2)	530 (94.8)	29 (5.2)	412 (73.7)	147 (26.3)	488 (87.3)	71 (12.7)	309 (55.3)	250 (44.7)
p-value[a]	0.405		*p* < 0.001		*p* < 0.001		0.730		0.043		0.067		0.013	

[a]χ^2 test for independence

Table 4 Differences in self-esteem based on ACEs (N = 559)

Variable	Category	*M (SD)*	*t*-ratio[a]	*d*	*p*-value
Physical abuse	No	31.25 (3.90)	4.30	*0.38*	< 0.001
	Yes	29.67 (4.37)			
Emotional abuse	No	30.99 (3.93)	1.11	0.09	0.266
	Yes	30.59 (4.24)			
Household violence	No	31.30 (4.21)	3.02	0.25	0.003**
	Yes	30.25(3.97)			
Emotional neglect	No	31.24 (3.98)	4.78	*0.45*	< 0.001
	Yes	29.38 (4.21)			
Physical neglect	No	31.06 (3.99)	4.65	*0.58*	< 0.001
	Yes	28.66 (4.37)			
Bullying	No	31.29 (3.99)	3.47	0.29	0.001**
	Yes	30.08 (4.19)			
Parent separation/ divorce	No	30.80(4.13)	1.10	0.21	0.272
	Yes	29.93(3.85)			

[a]Independent samples t-test and between-group effects (d) for each ACEs, *$p < 0.05$, **$p < 0.01$

Table 5 The ACEs predicting self-esteem (N = 559)

Independent variables	*β*	*SE*	*t*-ratio	*p*-value
Constant	32.184	0.310	103.936	< 0.001
Physical abuse	− 0.114	0.384	− 2.616	0.009**
Emotional abuse	0.042	0.384	0.907	0.365
Household violence	− 0.081	0.373	− 1.799	0.072
Parent separation/ divorce	− 0.023	0.757	− 0.564	0.573
Emotional neglect	− 0.169	0.381	− 4.141	< 0.001
Physical neglect	− 0.148	0.511	− 3.575	< 0.001
Bullying	− 0.081	0.358	− 1.880	0.061

$R^2 = 0$ .104, *F*-ratio = 9.11***, *SEE* = *3.928*

β standardized coefficients beta, *SE* std. error, R^2 R square, *SEE* std. error of the estimate. *$p < 0.05$, **$p < 0.01$

emotional neglect ($\beta = -0.169$, $p < 0.001$), and physical neglect ($\beta = -0.148$, $p < 0.001$) were the only predictors of self-esteem score. However, none of the other variables were related to self-esteem. Emotional neglect has a strong effect (− 0.169), followed by physical neglect (− 0.148) and then physical abuse (− 0.114). Thus, students who had experiences of emotional neglect, physical neglect, or physical abuse were more likely to have lower mean self-esteem scores (Table 5).

Discussion

The present study investigated the prevalence of seven adverse childhood experiences: physical abuse, emotional abuse, household violence, bullying, physical neglect,

emotional neglect, and divorce or separation of parents. The results of this study revealed emotional abuse to be the most commonly reported ACE (59.6%), followed by household violence (52.2%), bullying (44.7%), physical abuse (31.7%), emotional neglect (26.3), physical neglect (12.7%), and parents' separation (5.2%). In this study, all students were found to have experienced at least one type of ACEs, which is in line with many previous studies [33, 37, 38]. In a study conducted in Malawi, nearly 30% of adolescents have experienced more than seven types of ACEs [33].

Our finding showed that emotional abuse was the most commonly reported type of ACE is consistent with studies among secondary school students in Kuwait [10] and Saudi Arabia [39]. This finding is also in line with another study, which reported that children and adolescents experienced emotional abuse more often than emotional neglect [23]. In Malawi, however, emotional neglect had the highest prevalence among adolescents, followed by emotional abuse [33]. The prevalence of emotional abuse in Jordan is considered high, as reported by previous studies among children, adolescents, and adults who had experienced abuse during childhood [40, 41]. The high prevalence of emotional abuse among Jordanian students can be explained by the use of disregard, verbal abuse, insult, and humiliation of disregard, verbal abuse, insult, and humiliation of children and adolescents as a form of discipline by parents or teachers [41, 42].

Our study results also showed high rates of household violence, which could be related to violence as a form of parenting and child discipline, as shown by the Department of Statistics and UNICEF reports in Jordan [43]. Household violence, especially physical punishment, is often experienced by children and adolescents and used as a form of parenting and discipline in other countries, such as Kenya [44], Saudi Arabia [9], and China [42].

The rate of students who had experienced bullying was also high, which is consistent with other studies that have reported a high prevalence of bullying among Jordanian adolescents [45, 46]. Jordanian students more commonly experience bullying during early adolescence than in middle or late adolescence. This may be explained by the unique characteristics of this developmental stage, which include self-proof and impulsive behaviors directed towards violence against peers [47]. Some students may use bullying to react to the violence they are subjected to from others [48]. Further, our results showed that a higher rate of females than males reported having experienced bullying, which contradicts the findings of a previous study conducted among Jordanian students [45].

The present study results revealed that physical abuse was experienced by approximately one-third of the students, which is considered high. Our results are congruent with previous findings, which indicated that the prevalence of physical abuse among Jordanian students was high [49]. Adults or children may use physical abuse to solve conflicts, while teachers inside schools may use it as a form of discipline [50]. The literature has indicated that physical abuse is more common than other forms of violence and that the abusers are usually parents, teachers, other children, or strangers, which may be used as a form of discipline [10, 42, 48, 50].

According to a recent survey, one in ten children in Jordan experiences severe physical punishment [51]. The survey defined physical punishment as hitting or slapping the child in the face, head, or ears and repeatedly hitting the child harshly. According to Jordan News, the most common type of child abuse is maltreatment, which includes the violent punishment of children and many unreported cases to the authorities due to cultural values [51]. In Jordan, corporal punishment is unlawful in the penal system and schools, but it is not entirely prohibited in the home and in all forms of alternative care and daycare. Article 62 of the Criminal Code 1960 stated that the law permits "disciplinary beating of children by their parents in a manner allowed by public customs." This defense for the use of corporal punishment was amended to state that the law permits "types of discipline inflicted by parents on their children in a way that does not cause harm or damage to children within what is permitted by general custom." This effectively means that some level of violent punishment is still legally tolerated. Provisions against violence and abuse in the Juveniles Law 1968 and the Protection from Family Violence Law 2009 are not interpreted as prohibiting all corporal punishment in childrearing. The National Plan of Action for Children 2004–2013 does not refer to law reform to ban corporal punishment. Child abuse will continue and even increase in frequency and severity as long as our legislation permits parents to use physical punishment against their children [52].

As with regards to neglect, our findings indicated a rate of emotional neglect of 26.3% and a rate of physical neglect of 12.7%. Similar to previous studies, emotional neglect was higher than the prevalence of physical neglect among students [53, 54].

Finally, separation/divorce of parents was the least common type of ACEs among the students. Meanwhile, in other studies, the prevalence of separation/divorce of parents or death of one of the parents was found to be high [33, 55]. In Saudi Arabia, children living in single-parent families or divorced parents were more likely than children living with both parents to experience abuse and neglect. The prevalence of physical abuse was four times higher among children in single-parent families [56].

The results of this study revealed differences in ACEs based on gender. More male than female students reported having experienced physical abuse and neglect, while more female than male students reported having experienced

household violence. Other studies also reported a significant association between gender and abuse and neglect among children and adolescents, whereby the prevalence of physical abuse is higher among male than female students [10, 56]. The higher rates of physical abuse among male students may be attributed to cultural reasons. Physical abuse is used as a form of discipline with male children more frequently than with female children [2]. Contradictory to our findings, there have been previous studies that have not found any significant associations between ACEs and gender [57] or which have documented higher rates of physical abuse among female students [33, 56, 58]. Our study revealed that household violence by parents is more common among female than male students, which supports the findings of a previous study [58]. A study in Kuwait found that female students, as compared to male students, were more frequently abused physically and psychologically by one or both parents as a form of discipline [10]. Finally, a higher percentage of male than female students reported having experienced physical neglect, which is inconsistent with many other studies that have shown emotional or physical neglect to be experienced by male and female students in close proportions [54, 58–60].

The current study results revealed that students who had experienced physical abuse, bullying, household violence, physical neglect, or emotional neglect had lower self-esteem than students who had not. Among all seven types of ACEs, physical abuse, physical neglect, and emotional neglect significantly predicted low self-esteem among the students. These findings align with another study that documented a significant association of self-esteem with physical abuse, bullying, physical neglect, and emotional neglect [14]. Physical abuse and household violence impact the psychological status of children and adolescents and may lead to a reduction in the level of self-esteem [10]. Many studies have evidenced that physical abuse, emotional abuse, and ACEs are the most significant effects on self-esteem [10, 14, 15, 61]. Physical, emotional, and psychological abuse are generally accompanied by self-esteem problems, as children begin to think of themselves as defective, naughty, bad, undesirable, less adequate, or less deserving [6, 11].

Moreover, children who report having experienced bullying have been found to have lower levels of self-esteem compared to children who do not report experiences of bullying [14, 62]. As bullying behaviors increase, levels of self-esteem decrease, with studies evidencing the impact of bullying behaviors on self-esteem among children in Denmark, China, and Nigeria [16–18]. When a child is exposed to bullying, this causes the child to experience a decrease in self-confidence and thus psychological imbalance, leading to feelings of loneliness, fear of the external environment, and decreased self-esteem [16, 18]. When children and adolescents develop negative self-representations, they will develop a sense of being less important than others, hence leading to decreased self-esteem [63]. In addition to the decrease in self-esteem, children with negative self-representations may exhibit self-isolation, self-inversion, self-hating, self-contempt, and violent behavior against other children [24].

Limitations

Although our study offers valuable information about the effect of adverse childhood experiences on self-esteem among secondary school students in Jordan, some limitations should be considered. This study employed a cross-sectional retrospective design, and the weaknesses of cross-sectional studies include the inability to assess the incidence and make a causal inference. Also, the ACE experiences were evaluated retrospectively in which students were asked to recall their experiences from the past years, which may be subjected to recall bias. Using a self-reported questionnaire makes it challenging to ascertain if the ACEs reflected the reality of the experiences. The results of this study are based on only seven forms of ACEs out of 13 because of some ethical constraints and cultural sensitivity of the other forms. Thus, our data are limited and couldn't give a complete picture of the prevalence of all forms of ACEs. In this study, the primary outcome was to determine the effect of ACEs on self-esteem. However, many other impacts can be as significant as self-esteem, especially on students' mental and physical health. Factors contributing to the ACEs, such as family-related, child, and other social factors, were not determined, so the interpretation of the results was based on previous studies and lacked context. The data were collected from students in governmental (public) schools affiliated with one governorate in the northern part of Jordan, limiting its generalizability to other schools in Jordan.

Implications and Recommendations

The results of this study supported the high rate of different ACEs among students and the adverse impact of ACEs on students' self-esteem. The findings of this study call for urgent action to prevent ACEs, end violence and abuse against children, and promote children's health across the life span. The findings urge stakeholders and policymakers at health, social, criminal justice, and education institutions to enforce protection policies and develop violence prevention programs. The results recommend professionals in contact with children build a tool to assess children at risk, identify the victims, and provide them with appropriate support. The results also highlight the importance of raising awareness among parents, teachers, and the public about the impact of ACEs on children's health and the importance of intervening early. Professionals and experts in the education

system should emphasize positive childhood experiences to strengthen a child's self-worth to defeat the adverse effect of ACES. Education of parents, teachers, and other professionals who work with children and adolescents on the impact of ACEs on children's health status, risk behaviors, and academic achievement is needed. Educate adolescents on protective factors and encourage them to seek help when they experience violence. Banning corporal punishment of children and adolescents within the national family law legislation is necessary. Intersectoral cooperation is also needed to successfully decrease the rate of violence and abuse against children and improve a safe and healthy environment for children to grow.

Future research which evaluates the risk factors, causes, consequences, costs, and prevention methods of child and adolescent abuse and neglect are recommended. Prospective longitudinal studies in Jordan that provide a broader perspective on this phenomenon, are recommended.

Summary

This study revealed that several ACEs were prevalent among Jordanian students, and negatively affected their self-esteem. Compared to female students, male students reported experiencing physical abuse and neglect, but female students were more than males to experience household violence. Efforts to prevent violence against students are imperative by addressing the underlying causes. National programs should raise awareness about non-violent values and transform attitudes that normalize violence against children, such as stereotypical gender roles and discrimination, acceptance of corporal punishment, and harmful traditional practices. Community awareness campaigns should focus on the violence's detrimental effects on children.

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Data Availability Data will be available upon request.

Declarations

Conflict of interest Authors have no competing interests to declare.

Ethical Approval Ethical approvals were obtained from all involved parties**.** After obtaining ethical approval, students who assented to participate in the study received a cover letter explaining the purpose and outcomes of the study. Parental written approval was also obtained.

References

1. WHO (2018) Violence against children. WHO https://www.who.int/news-room/fact-sheets/detail/violence-against-children
2. UNICEF (2019) Adverse childhood experiences (ACE) study: research on adverse childhood experiences in Serbia. UNICEF in Serbia, Belgrade
3. Hillis S, Mercy J, Amobi A, Kress H (2016) Global prevalence of past-year violence against children: a systematic review and minimum estimates. Pediatrics 137(3):e20154079
4. Frederick J, Goddard C (2010) 'School was just a nightmare': childhood abuse and neglect and school experiences. Child Fam Soc Work 15(1):22–30
5. Garrido EF, Weiler LM, Taussig HN (2018) Adverse childhood experiences and health-risk behaviors in vulnerable early adolescents. J Early Adolesc 38(5):661–680
6. Pearce J, Murray C, Larkin W (2019) Childhood adversity and trauma: experiences of professionals trained to routinely enquire about childhood adversity. Heliyon 5(7):e01900
7. Merrick MT, Ports KA, Ford DC, Afifi TO, Gershoff ET, Grogan-Kaylor A (2017) Unpacking the impact of adverse childhood experiences on adult mental health. Child Abuse Negl 69:10
8. Kazarian SS (2015) Family violence in the Arab world = العنف الأسري في العالم العربي. Arab J Psychiatry 26(1):4–14
9. Almuneef M, ElChoueiry N, Saleheen HN, Al-Eissa M (2017) Gender-based disparities in the impact of adverse childhood experiences on adult health: findings from a national study in the Kingdom of Saudi Arabia. Int J Equity Health 16(1):90
10. Al-Fayez GA, Ohaeri JU, Gado OM (2012) Prevalence of physical, psychological, and sexual abuse among a nationwide sample of Arab high school students: association with family characteristics, anxiety, depression, self-esteem, and quality of life. Soc Psychiatry Psychiatr Epidemiol 47(1):53–66
11. Karakus Ö (2012) Abuse and self esteem. Int J Hum Sci 9(2)
12. Miller AB, Esposito-smythers C, Weismoore JT, Renshaw KD (2014) The relation between child maltreatment and adolescent suicidal behavior: a systematic review and critical examination of the literature. Clin Child Fam Psychol Rev 16(2):146–172
13. Gateway CWI (2019) Long-term consequences of child abuse and neglect [Fact sheet]. U.S, Washington, DC
14. Khodabandeh F, Khalilzadeh M, Hemati Z (2018) The impact of adverse childhood experiences on adulthood aggression and self-esteem-a study on male forensic clients. Nov Biomed 6:85
15. Mwakanyamale AA, Yizhen Y (2019) Psychological maltreatment and its relationship with self-esteem and psychological stress among adolescents in Tanzania: a community based, cross-sectional study. BMC Psychiatry 19(1):1–9
16. Huang H, Hong JS, Espelage DL (2013) Understanding factors associated with bullying and peer victimization in chinese schools within ecological contexts. J Child Fam Stud 22(7):881–892
17. Andersen LP, Labriola M, Andersen JH, Lund T, Hansen CD (2015) Bullied at school, bullied at work: a prospective study. BMC Psychol 3(1):1–5
18. Folayan MO, Oginni O, Arowolo O, El Tantawi M (2020) Internal consistency and correlation of the adverse childhood experiences, bully victimization, self-esteem, resilience, and social support scales in Nigerian children. BMC Res Notes 13(1):1–7
19. Spade J (2007) The relationship between student bullying behaviors and self-esteem. Leadersh. Stud. Ed.D. Diss

20. Kim J, Cicchetti D (2006) Longitudinal trajectories of self-system processes and depressive symptoms among maltreated and nonmaltreated children. Child Dev 77(3):624–639
21. Jenny C (2015) Chil abuse and neglect: diagnosis, treatment, and evidence. Child Youth Serv Rev 26:1097
22. Al-Arab AR (2011) Violence against children from the parents point of view in rural society: forms and effects لعنف ضد الطفل من وجهة نظر أولياء الأمور فى المجتمع الريفى : الأشكال و الآثار Repository Yu Edu Jo 27(2):1764–1778
23. Shaffer A, Yates TM, Egeland BR (2009) The relation of emotional maltreatment to early adolescent competence: developmental processes in a prospective study. Child Abuse Negl 33(1):36–44
24. Muris P, Otgaar H, Meesters C, Heutz A, van den Hombergh M (2019) Self-compassion and adolescents' positive and negative cognitive reactions to daily life problems. J Child Fam Stud 28(5):1433–1444
25. Bolger KE, Patterson CJ, Kupersmidt JB (1998) Peer relationships and self-esteem among children who have been maltreated. Child Dev 69(4):1171–1197
26. Juffer F, Van Ijzendoorn MH (2007) Adoptees do not lack self-esteem: a meta-analysis of studies on self-esteem of transracial, international, and domestic adoptees. Psychol Bull 133(6):1067–1083
27. Department of Statistics (DOS) (2019) Jordan Population and Family Health Survey 2017–18. Department of Statistics/Jordan and ICF, Amman
28. Butt AI (2018) Changing norms and behaviours to end physcial violence against children in Jordan 2019–2021
29. Al-Khatib AJ (2020) A Comprehensive review of research on child abuse in Jordan. Child Care Pract 28:125
30. Cohen J (1988) Statistical power analysis for the behavioral sciences, 2nd editio. Lawrence Erlbaum Associates, New York
31. WHO (2020) Adverse Childhood Experiences International Questionnaire (ACE-IQ). WHO https://www.who.int/publications/m/item/adverse-childhood-experiences-international-questionnaire-(ace-iq. Accessed 28 Aug 2021
32. Rosenberg M (1965) Society and the adolescent self-image. Princeton University Press, Princeton
33. Kidman R, Smith D, Piccolo LR, Kohler HP (2019) Psychometric evaluation of the Adverse Childhood Experience International Questionnaire (ACE-IQ) in Malawian adolescents. Child Abus Negl 92:139–145
34. World Health Organization (2015) WHO guidelines on translation and adaptation of instruments. WHO, Geneva, pp 4–7
35. Oweis A, Gharaibeh M, Alhourani R (2010) Rosenberg self-esteem scale--modified Arabic version [Database record]. Am Psychol Assoc
36. WHO (2018) Adverse Childhood Experiences International Questionnaire (ACE-IQ) guidance for analysing ACE-IQ. Child Abuse Negl 88:179
37. Duke NN, Pettingell SL, Mcmorris BJ, Borowsky IW (2010) Adolescent violence perpetration: associations with multiple types of adverse childhood experiences. Pediatrics 125(4):e778
38. Mrug S, Windle M (2010) Prospective effects of violence exposure across multiple contexts on early adolescents' internalizing and externalizing problems. J Child Psychol Psychiatry 51(8):953–961
39. Elarousy W, Al-Jadaani M (2013) Emotional abuse among children: a study in Jeddah, Saudi Arabia. سوء املعاملة العاطفية لألطفال :دراسة يف جدة ،املمكلة العربية السعودية
40. Al-Zboon E, Ahmad J, Al-Dababneh K (2015) Prevalence and types of childhood abuse among special education students attending Jordanian Universities. Int J Adolesc Youth 21(4):476–485
41. Al-Modallal H, Al-Omari H, Hamaideh S, Shehab T (2020) Childhood domestic violence as an ancestor for adulthood mental health problems: experiences of Jordanian women. Fam J 28(4):390–395
42. Lo CKM et al (2019) Prevalence of child maltreatment and its association with parenting style: a population study in Hong Kong. Int J Environ Res Public Health 16(7):1130
43. J Department of statistics Amman and D. Program (2017) Jordan Population and Family Health Survey
44. Laurenzi CA et al (2020) Associations between young children's exposure to household violence and behavioural problems: evidence from a rural Kenyan sample. Glob Public Health 15(2):173–184
45. Shaheen AM, Hammad S, Haourani EM, Nassar OS (2018) Factors affecting Jordanian school adolescents' experience of being bullied. J Pediatr Nurs 38:e66–e71
46. Shaheen A, Nassar O, Saleh M, Arabiat D (2014) Understanding of school related factors associated with emotional health and bullying behavior among jordanian adolescents. Iran J Public Health 43(11):1528–1536
47. Hockenberry MJ, Wilson D (2012) Wong's nursing care of infants and children, vol 106. Elsevier, Amsterdam
48. Al-Najdawi AM, Kafawin K (2015) أسباب السلوك العدواني عند الأطفال من وجهة نظرهم search.ebscohost.com, vol. Dirasat: H, pp 1487–1509
49. Krishan RAL, Al-Wurikat AA (2019) The impact of social factors on child abuse: a case study in AL- Khansa Center. IUG J Hum Res 28(4):205–227
50. Aras Ş, Özan S, Timbil S, Şemin S, Kasapçi O (2016) Exposure of students to emotional and physical violence in the school environment. Noropsikiyatri Ars 53(4):303–310
51. Sottile Z (2021) 'It's a reality:' 13 percent of Jordanian children experience severe physical punishment. https://www.jordannews.jo/Section-109/News/It-s-a-reality-13-percent-of-Jordanian-children-experience-severe-physical-punishment-4490. Accessed 12 Feb 2022
52. Global Initiative to End All Corporal Punishment of Children (2017) Briefing on Jordan for the Human Rights Committee, Country Report Task Force. In: 119th Session (Mar 2017)
53. Soares ALG, Howe LD, Matijasevich A, Wehrmeister FC, Menezes AMB, Gonçalves H (2016) Adverse childhood experiences: Prevalence and related factors in adolescents of a Brazilian birth cohort. Child Abus Negl 51:21–30
54. Stoltenborgh M, Bakermans-Kranenburg MJ, Van Ijzendoorn MH (2013) The neglect of child neglect: a meta-analytic review of the prevalence of neglect. Soc Psychiatry Psychiatr Epidemiol 48:345
55. Gonçalves H et al (2016) Adverse childhood experiences and consumption of alcohol, tobacco and illicit drugs among adolescents of a Brazilian birth cohort. Cad Saude Publica 32(10):1–10
56. Meinck F, Cosma AP, Mikton C, Baban A (2017) Psychometric properties of the Adverse Childhood Experiences Abuse Short Form (ACE-ASF) among Romanian high school students. Child Abus Negl 72:326–337
57. Bankole ET, Arowosegbe CK (2014) Effect of child abuse on self-esteem among secondary schools students in Ekiti State (case study of Iworoko community high school). Int J Hum Soc Sci Educ 1(12):2349

58. Asscher JJ, Van der Put CE, Stams GJJM (2015) Gender differences in the impact of abuse and neglect victimization on adolescent offending behavior. J Fam Violence 30(2):215–225
59. Afifi TO, Taillieu T, Cheung K, Katz LY, Tonmyr L, Sareen J (2015) Substantiated reports of child maltreatment from the Canadian incidence study of reported child abuse and neglect 2008: examining child and household characteristics and child functional impairment. Can J Psychiatry 60(7):315–323
60. Hagborg JM, Tidefors I, Fahlke C (2017) Gender differences in the association between emotional maltreatment with mental, emotional, and behavioral problems in Swedish adolescents. Child Abus Negl 67:249–259
61. Chapman DP, Whitfield CL, Felitti VJ, Dube SR, Edwards VJ, Anda RF (2004) Adverse childhood experiences and the risk of depressive disorders in adulthood. J Affect Disord 82:217–225
62. Kumpulainen K, Karelia S (1998) Bullying and psychiatric symptoms among elementary school-age children. Child Abuse Negl 22(7):705–717
63. Baumeister RF (1982) Self-esteem, self-presentation, and future Interaction: a dilemma of reputation. J Pers 50(1):29–45