



**ORIGINAL RESEARCH PAPER**

**Psychiatry**

**THE EFFECTS OF ADVERSE CHILDHOOD EXPERIENCES ON PSYCHOSOCIAL WELLBEING AND MEDIATING ROLE OF SELF-ESTEEM AMONG MEDICAL STUDENTS**

**KEY WORDS:**

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**ABSTRACT**

**Background:** Adverse childhood experience (ACE) has cumulative consequences on physical, mental and social wellbeing. The impact of ACEs is amplified by stressors, such as academic, physical, social and emotional stressors, which medical students are constantly exposed to. **Aim and Objective:** This study is aimed at determining the association between adverse childhood experiences and adult psychosocial wellbeing and mediating role of self-esteem among preclinical medical students. **Participants and setting:** A total of 138 undergraduate medical students at C.U. Shah medical college and hospital, Surendranagar participated in the study. **Methods:** Participants completed online google forms having socio-demographic, an Adverse Childhood Experience, the World Health Organization's Quality of Life (WHOQOL-BREF) and the Rosenberg's self-esteem questionnaires. Data obtained were analysed using SPSS. Descriptive and inferential statistical analyses were performed. **Results:** At least one out of ten categories of ACEs were reported by 39.8% of respondents; physical abuse (19.1%), emotional abuse (18.2%), parental divorce (9.4%) and sexual abuse (9.0%). There was a significant association between adverse childhood experiences and adult psychosocial wellbeing ( $p < 0.05$ ), as well as low self-esteem ( $p < 0.05$ ). Respondents with previous exposure to ACEs were six times more likely to suffer from low esteem compared to non-exposed students (Adj OR:6.3, 95%CI:1.3-31.4,  $p = 0.003$ ). Mother's ( $p = 0.001$ ) and father's ( $p = 0.028$ ) level of education, parental separation ( $p < 0.0001$ ), were associated with exposure to ACEs. **Conclusion:** this study revealed an association between exposure to adverse childhood experiences and adult psychosocial well-being with those exposed reporting poorer wellbeing and functioning; and a strong likelihood of having low self-esteem among medical undergraduates.

**INTRODUCTION**

Adverse childhood experiences (ACEs) consist of household dysfunction (e.g., parental divorce), all forms of abuse, and neglect before the age of 18 years<sup>1</sup>. The impact of childhood experiences on adult psychosocial wellbeing as defined by mental wellbeing, life satisfaction, interpersonal relationships and educational achievement is well documented in the literature<sup>2</sup>. Poor outcomes associated with ACEs have appeared across diverse developmental and health domains such as substance abuse<sup>3</sup>, mood or anxiety problems<sup>4</sup>, poor physical health-related indices<sup>5</sup>, and socially-unacceptable behaviours<sup>5,6</sup>. Also, a dose-response relationship is now widely accepted: experiencing accumulating levels of adversity during childhood increases the possibility of undesirable outcomes in later life<sup>5,6</sup>.

Global prevalence of adverse childhood experiences (ACEs) ranges from 40% - 100% of study populations<sup>1,2,5,7</sup>

In some developing countries, like India, any detailed, national data on ACEs is lacking<sup>8</sup>. Damodaran and Varghese<sup>9</sup> compiled data on ACEs in youth based in Kerala (South India) and stated that in a sample of 600 young people, 91% reported at least one ACE and over half the population reported three or more ACEs. Most ACEs within an Indian context have received little attention except for child sexual abuse (CSA)<sup>9</sup>. It is estimated that every second child is exposed to sexual abuse and violence<sup>8</sup>. These figures are considered underestimates because of limited surveillance of direct ACEs such as physical abuse as well as CSA.

To date, little is known about the role of other cognitive abilities, such as resilience and self-esteem, in dealing with stressful situations<sup>12</sup>. Resilience is related to emotional intelligence, which is the ability to accurately recognize and understand one's own and others' emotions, to express emotions appropriately, and control one's emotions<sup>13</sup>, and increases social skills to cope with stress. Self-esteem, which is defined as "an individual's subjective evaluation of her or

his worth as a person"<sup>13</sup>, is related to the quality of self-care<sup>14,15,16</sup>. Self-esteem increases flexibility and efficiency while learning. Resilience and self-esteem, which both increase the ability to resist peer pressure as well as the quality of social engagement, are important not just in preventing the onset of mental diseases, but also in promoting one's ability to contribute to society and achieving a better quality of life<sup>17</sup>. Children who suffer from maltreatment demonstrate lower self-esteem than those who do not<sup>19</sup>. Following ACE experiences, survivors report low self-worth and powerlessness<sup>20</sup>. A recent study demonstrated that emotional abuse is negatively associated with the level of self-esteem in adolescents<sup>21</sup>. Taken together, these findings suggested that ACEs are a significant risk factors for self-esteem. Previous studies have also indicated that self-esteem has a mediating effect on the relationship between early adverse experiences (such as abuse and household dysfunction) and emotional problems, as well as quality of life<sup>21</sup>. Therefore, we have reason to infer that self-esteem is a mediator between ACEs and psychosocial well-being. Thus, it is worthwhile to investigate the association between ACEs and self-esteem.

Stressors have been reported to serve as mediators between ACEs and poor adult well-being; Concurrently ACEs increase the number of stressors thus accentuating these effects<sup>10</sup>. Medical students are reputedly exposed to a high degree of stress, with about three-quarters reporting perceived stress including academic, emotional, physical and social stress<sup>11</sup>.

Psychosocial morbidity pre-admission is a major predictor of stress in university students. Notwithstanding, the literature has limited information on the relationship between exposure to ACEs and psychosocial wellbeing. Also studies on Indian students are scarce. The present study therefore aims to determine the association between ACE and psychosocial wellbeing, as well as mediating effect of self-esteem on this association among medical students of the c.u.shah medical college and hospital, surendranagar.

**OBJECTIVES**

to determine frequency and pattern of adverse childhood experiences among medical undergraduates, to determine level of psychosocial well-being among medical undergraduates and it's relationship with ACEs, to determine the mediating effect of self-esteem between adverse childhood experiences and psychosocial well-being.

**MATERIALS AND METHODS**

**Study design, sample and setting:**

A cross sectional study design was conducted among the undergraduate medical students of the C.U.Shah Medical College and Hospital. Total sampling of all consenting students was done.

**Study procedure and instruments:**

Respondents were approached after a class session and asked to complete self-reported study instruments (questionnaires) through online google forms between July to August 2022, consisting of socio-demographic characteristics and the following validated instruments:

World Health Organization (WHO)'s Quality of Life scale (WHOQOL-BREF) - a 26 item questionnaire that measures quality of life in four domains: social, physical, psychological and environmental. It has good internal reliability<sup>22</sup>.

Rosenberg's self-esteem questionnaire - It is a 10-item instrument that asks the respondents about their self-esteem and to reflect on their current feelings<sup>23</sup>.

Adverse Childhood Experience (ACE) questionnaire - This is a 10-item questionnaire designed by the Centre for Disease Control and prevention (CDC) of the United States of America<sup>24</sup>. It retrospectively asks questions on abuse (physical, psychological and sexual), neglect and household dysfunction experienced during childhood. A good reliability and valid internal consistency was reported in a previous study<sup>25</sup>.

**Ethical considerations:**

Ethical approval was granted by the Ethics Committee of the C. U. Shah Medical College and Hospital, Surendranagar, Gujarat. Online informed consent was obtained from all participants through google form, after the study had been introduced and explained to them. Participation was voluntary and participant's confidentiality was assured as no identifying markers were required. Participants were assured of the liberty to withdraw from the study at any point in time without consequences.

**Data entry and analysis:**

Data generated were entered and analysed using the Statistical Package SPSS statistics version 23. Frequencies and proportions were reported as summary statistics for all categorical variables, while mean and standard deviation was computed for all continuous variables. The prevalence of adverse childhood experience was determined using answers to items on the ACE questionnaire and summarized using frequencies and proportions.

Adult psychosocial wellbeing was determined using the converted scoring system on a scale of 100, of the WHOQOL-BREV analysis guideline. Self-esteem was evaluated using the Rosenberg's self-esteem scoring system. Quantitative scores for exposure to ACE were categorized as exposed vs. non-exposed. Associations between categorical data were assessed using Chi-square test while difference in quantitative data were assessed using independent t-test. All analyses were performed at 0.05 level of significance. Furthermore, variables found to be significant at the bivariate analysis were further investigated using logistic regression model. Odds ratio (OR), adjusted odds ratio (AOR) and 95% confidence intervals (CI) were reported.

**RESULTS**

A total of 138 respondents participated in the study with a mean age of 20.1 years (SD=5.6) with ages ranging from 18 to 25 years. The study population had slightly more males than females. Other details of the sociodemographic characteristics are on Table 1.

The overall prevalence of adverse childhood experiences (ACEs) was 39.8% with the commonest being physical assault (19.1%) followed by verbal assault (18.2%) and parental divorce (9.4%). The prevalence of other ACEs is presented in figure 1.

The transformed score in the psychological domain i.e. on the WHOQOL-BREF scale for respondents who had been exposed to ACEs (14.74 ± 2.5) was lower than the score for those that had not been exposed to ACEs (15.51 ± 2.0), p = 0.009. In the social domain, the transformed score for participants who had been exposed to ACEs was 14.52 ± 2.8 compared to 15.30 ± 2.6 for the unexposed counterparts (p = 0.021).

Similar relationships were recorded between the transformed scores for the physical and environment domains and exposure vs non-exposure to ACEs (Table 2).

The association between exposure to ACEs and self-esteem is shown in Table 3. Participants who had been exposed to ACEs were six times more likely to have lower self-esteem compared to their unexposed counterparts even after adjusting for socio-demographic variables (AOR:6.3, 95%CI:1.3-31.4, p=0.003) [Table 3].

More than 80% of participants whose parents are separated had experienced ACE, same for those whose parent(s) have low level of education. Less than 40% of participants whose parents have tertiary education had experienced ACE, p<0.05, Table 1.

**DISCUSSION**

This study investigated the association between ACEs and psychosocial wellbeing among medical undergraduates. Previous studies have reported the link between ACEs and poor health related outcomes<sup>1,2,10,25,26,27,28</sup>. Our results confirmed this trend among medical students with a high prevalence (39.8%) of ACE. This is consistent with previous studies, which reported prevalence rates of 50% in the United States of America<sup>1</sup> and the 2019 study in the state of Kerala indicated 91% prevalence amongst the youth who had experienced ≥ 1 ACE, and about 50% of them had experienced ≥ 3 ACEs<sup>2,29</sup>. The slightly lower rate from our study may be a reflection of the difference in study population.

The study indicates that nearly 1 in 5 of the sampled medical students had experienced physical or emotional neglect; while almost 1 in 10 had suffered from emotional neglect, sexual abuse or parental separation. These figures are a cause for concern.

Physical abuse was the commonest ACE in this study. This is probably explained by the fact that certain practices like corporal punishment remains socio-culturally acceptable in our society, that is seen as parental discipline. The prevalence of parental separation, divorce or demise is also a source of concern, but it is much lower than results obtained in the Kaiser Permanente ACE study (CDC, 2016). This may be partly due to the high rates of divorce in the USA, with divorce rates nearing half (50%) of all marriage rates within a particular time period (CDC, 2015). Certain socio-demographic variables were found to be predictors of exposure to ACEs. A high proportion of participants with low parental level of education had at least one ACE. This is because parents with lower level of education have been reported to have poorer attitudes. Other predictors of ACE

include parental separation (or divorce). Perhaps this is attributable to the fact that children are often neglected and maltreated in the absence of their parents.

Our results showed an association between ACE(s) and poor psychosocial well-being among the medical students. Respondents who have been exposed to ACE had lower scores for well-being on the WHOQOL-BREV scale as compared to their unexposed counterparts. This finding was consistent across all the four domains of the WHOQOL-BREV: physical, psychological, environmental and social well-being.

This poor sense of social well-being can be explained by several negative coping mechanism that these individuals may have developed over the years, leading to poor interpersonal relationships, low self-worth and low trust in others<sup>3,27</sup>. Furthermore, ongoing stressors, such as academic demands and time constraints in medical school adds an additional layer of complexity that puts such vulnerable medical students at greater risk.

This study found that medical students who had been exposed to ACE were 6 times more likely to suffer from low self-esteem than their unexposed peers. This is consistent with a previous report indicating that household dysfunction and experience of abuse is related to low self-esteem; while family bonding plays a protective role<sup>32</sup>. Although the individual components of ACE were not tested for an association with low self-esteem in this study, Mullen et al<sup>33</sup>, reported that emotional abuse is specifically associated with low self-esteem.

It is therefore, not surprising that early experience of physical abuse, lack of care and protection, feeling of not being loved, and shame due to either mental illness in the household, or a household member in prison may all contribute to a feeling of low self-esteem.

**Limitations Of Study**

There are several caveats in our study. Firstly, the cross-sectional nature of the study design is a limitation as we cannot determine the nature and direction of association between ACEs and psychosocial wellbeing. Secondly, we used the traditional ACEs categories often used in the evidence base but did not include extended ACEs such as financial difficulties, community violence, bullying or social support of the parent. Particularly in developing, ACE constructs should be uniquely constructed. Thirdly the study relied on self-report data, which have well-known limitations<sup>35</sup>. For instance, retrospective accounts of ACEs may be subject to recall bias. It is plausible, for example, that participants psychological functioning could affect their perception of past events. Further longitudinal studies are required to confirm our findings.

**CONCLUSION**

In conclusion, this study revealed an association between exposure to adverse childhood experiences and adult psychosocial well-being with those exposed reporting poorer wellbeing and functioning; and a strong likelihood of having low self-esteem. longitudinal study should be conducted to confirm our findings. Additional research is required to provide more insight into stressors and how they may be influencing the relationship between ACE and psychosocial wellbeing amongst medical students. This may generate useful information to guide the development of structured interventions that will aim at improving the psychosocial wellbeing of medical students. Especially, as many may already be vulnerable to poor mental health by ACE(s) and additional study related stress.

**Table 1: Correlates of socio-demographic parameters with exposure to ACEs.**

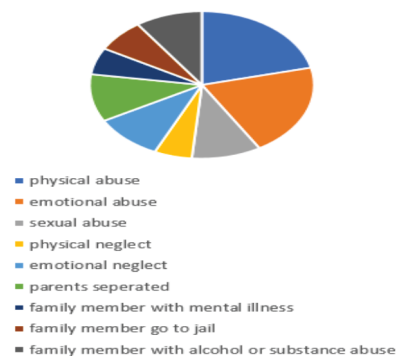
		.No ACE exposure n (%)	ACE Exposed (at least 1) n (%)	Total n (%)	Statistics Chi2	P-value
Age	<19yrs	58	37	95	0.104	0.74
	>19yrs		18	43		
Sex	Male	47	31	78	0.009	0.97
	Female	36	24	60		
Religion	Hindu	75	49	124	0.586	0.808
	Other	08	06	14		
Father's level of education	No education	04	0	04	14.41	0.002
	Primary	05	13	13		
	Secondary	31	64	64		
	Graduate	43	57	57		
Mother's level of education	No education	03	06	09	11.69	0.008
	Primary	05	12	17		
	Secondary	27	12	39		
	Tertiary	48	25	73		
Parental separation	No	78	52	130	21.70	<0.001
	Yes	01	07	08		

**Table 2: Association between exposure to ACEs and adult psychosocial wellbeing.**

Outcome (psychosocial well-being) QOL domains	No experience Mean [SD]	Experienced at least 1 Mean [SD]	t-test	Mean difference [95% CI]	p-value
Physical	14.87 [2.1]	14.24 [2.6]	2.13	0.64 [0.0-1.2]	0.034
Psychological	15.51 [2.0]	14.75 [2.5]	2.65	0.76 [0.2-1.3]	0.009
Social	15.30 [2.6]	14.52 [2.8]	2.33	0.78 [0.1-1.4]	0.021
Environment	13.7 [2.1]	13.1 [2.1]	2.45	0.67 [0.1-1.2]	0.015

**Table 3: Logistic regression analysis for the association between ACEs and self-esteem.**

Low self esteem		
ACEs	Unadjusted OR (95% CI)	Adjusted OR (95% CI) ^
No experience	Ref	Ref
Experienced at least 1	7.00(1.5-33.0) *	6.32(1.3-31.4) *



**Figure 1: Distribution of ACEs according to different domains:**

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