Original Article

Family and Childhood Adversity: A Quantitative Study of Household Dysfunction using ACE-IQ Data from Madhya Pradesh

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Abstract

Background: Adverse Childhood Experiences (ACEs) have been recognized as significant predictors of long-term physical and mental health outcomes. Household dysfunction, including parental substance use, mental illness, domestic violence, and disrupted family structures, contributes heavily to the burden of ACEs. This study investigates the association between these house hold-level adversities and ACE prevalence among youth in Madhya Pradesh, India. To examine the prevalence of key household ACE domains and assess the association of abuse and neglect in household with parental substance use and single parenting.

Methods: A cross-sectional quantitative study was conducted among 203 participants using the WHO ACE-International Questionnaire (ACE-IQ). Logistic regression analysis was employed to determine associations between parental alcohol/drug use, single parenting and specific ACE domains, including neglect, abuse, and domestic violence.

Conclusion: Emotional neglect (51.2%) and physical neglect (46.3%) were the most frequently reported ACEs. Parental substance use was significantly associated with increased odds of sexual abuse (OR = 3.019, p = 0.046). Elevated, though non-significant, odds were also observed for emotional abuse (OR = 4.28) and exposure to violence (OR = 2.86). Household dysfunction plays a critical role in shaping childhood adversity. The strong association between parental substance use and sexual abuse, along with high rates of neglect, highlights the need for family-focused intervention strategies. Early identification, routine ACE screening, and integrated mental health support are essential to break intergenerational cycles of trauma.

Keywords: domestic, neglect, abuse, parental alcoholism, adverse childhood experience, India.

Introduction

Adverse Childhood Experiences (ACEs) have garnered increasing attention for their profound and long-lasting impact on health, development, and well-being. Among these, household dysfunction—characterized by parental substance use, domestic

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violence, separation, and the presence of incarcerated or mentally ill family members—has emerged as a significant contributor to intergenerational trauma.[1,2] Such environments can disrupt the formation of secure attachments, affect emotional regulation, and increase vulnerability to physical and mental health disorders in later life.

Multiple global studies underscore the prevalence and influence of household dysfunction. Merrick et al.[3] identified emotional abuse and parental separation as leading ACEs in a U.S. sample, while Mlouki et al.[4]including behavioral addiction such as Internet Addiction (IA observed a high prevalence of intra-familial ACEs (94.5%) in Tunisian students, with emotional neglect topping the list. Similarly, Majid et al.[5] from Malaysia found household dysfunction to be more frequent among university students exposed to ACEs. Webster et al.[6] also noted that parental separation and financial hardship were common childhood adversities in young children. These patterns reflect how household-level adversities often form the core of early trauma, with the potential to perpetuate cycles of dysfunction and inequality.

In India, especially in states like Madhya Pradesh, where socio-economic vulnerabilities intersect with traditional family structures, the risk of adverse familial experiences can be particularly pronounced. However, limited research has been conducted to quantify and characterize such experiences in this context.

This study aims to examine the prevalence and interrelations between specific domains of household dysfunction—namely parental substance use, domestic violence, separated or single parent households, and incarcerated or mentally ill household members—among young adults in Madhya Pradesh using the WHO ACE-IQ tool. By understanding these relationships, the study contributes to the growing discourse on intergenerational trauma and the urgent need for targeted family-level interventions in public health.

Methods

Study Design and Setting

This is a community-based, cross-sectional, quantitative study conducted in Madhya Pradesh, India. Considering the literature, (18) sample size was calculated with a 95% confidence interval (standard normal deviate, Z = 1.96) as,

$$n = 4\frac{pq}{l^2}$$

Where n is the desired sample,

n = required minimum sample size

p = prevalence of ACE= 88.2% =0.882

q = 1- p = 1-0.882 = 0.118

l = 5 % absolute error = 0.05

$$\text{So, } n = \frac{4 \text{ x } (0.882) \text{ x } (0.118)}{(0.05)^2}$$

n = 166.52 = 167(approximately)

The minimum required sample size will be 167.

To account for non-response and incomplete data, the sample size will be increased by 10% to 184.

There are 78 wards in the Jabalpur urban area, 70 of which are under Nagar Nigam and 8 of which are under Cant area.Multistage random sampling was employed. In the first stage, 10 wards, were selected by lottery method.Ten wards were chosen by lottery in the first stage. In the second stage, houses were chosen from wards using systematic random sampling. Following line listing, the table of random numbers method was used to choose the first home, and the sampling interval (total household/20) was added to choose the remaining homes. From each ward, 20 houses are chosen, and research participants are enlisted. Young residents between the ages of 18 and 25 who have provided their informed consent to participate in the study are among the study's selection criteria. Individuals who declined to participate in the study were excluded.

Data was collected using the World Health Organization's Adverse Childhood Experiences International Questionnaire (ACE-IQ), which includes domains on abuse, neglect, and household dysfunction. For this analysis, the focus was on five variables:

1. Physical neglect
2. Emotional neglect
3. Alcohol and/or drug abuser in the household

4. Someone chronically depressed, mentally ill, institutionalized or suicidal
5. Incarcerated household member
6. One or no parents, parental separation or divorce
7. Household member treated violently
8. Physical abuse
9. Emotional abuse
10. Contact sexual abuse

Data was entered and cleaned using Microsoft Excel and analyzed using SPSS version 23. Descriptive statistics were used to estimate the prevalence of each variable. Chi-square tests were used to examine associations between household dysfunction and ACE scores. A p-value < 0.05 was considered statistically significant. A multinomial logistic regression was conducted to examine the association between parental alcohol and/or drug abuse , Single parenting and various adverse childhood experience (ACE) domains, including exposure to violence, emotional and physical neglect, physical and emotional abuse, and sexual abuse.

Results

The study included **203 participants**, of whom **36% were male (n=73)** and **64% were female (n=130)**. The mean age was **21.3 years (SD ±2.5)**. **87%** were currently pursuing higher education. According to the analysis, the prevalence of Adverse Childhood Experience (ACE) was high (90.1%) with almost two-thirds (62%) of the sample had three or more ACEs. Figure 1

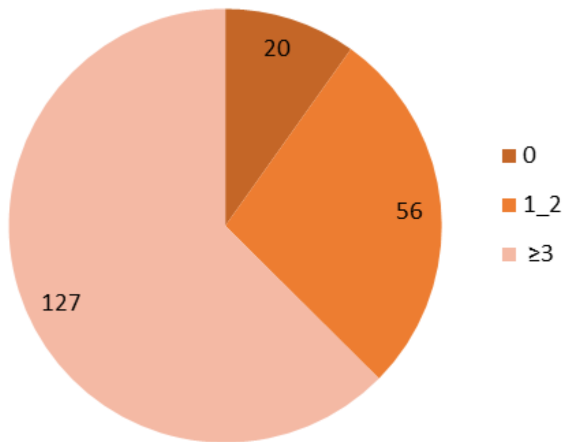

Figure 1: ACE Score

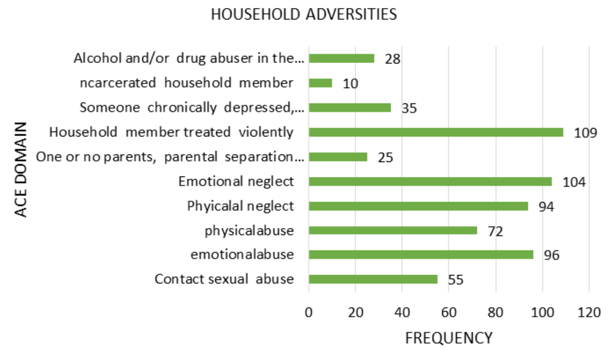

Figure 2: Frequency of household adversities

Physical and emotional neglect were used as indicators of a parent-child relationship. Parental care and support was lacking in 51.2% of cases emotionally and in 46.3% of cases physically, and it was significantly associated with the frequency of ACE scores. The frequency of an ACE score has a significant association with all aspects of an adverse family environment, including 47.3% experiencing emotional abuse and 53.7% witnessing violent treatment of a household member. Figure 2Table 1

Table 1: Association between ACE score and Household adversity domains

Household adversities		Frequency of ACE score			P value
		0	1-2	≥3	
Physical neglect	Yes	0	12	82	<0.001
	No	20	44	45	
Emotional neglect	Yes	0	15	89	<0.001
	No	20	41	38	
Alcohol and/or drug abuser in the household	Yes	0	1	27	<0.001
	No	20	55	100	
Someone chronically depressed, mentally ill, institutionalized or suicidal	Yes	0	0	35	<0.001
	No	20	56	92	
Incarcerated household member	Yes	0	0	10	0.043
	No	20	56	117	
One or no parents, parental separation or divorce	Yes	0	3	22	0.016
	No	20	53	105	

Continue......

Household member treated violently	Yes	0	6	103	<0.001
	No	20	50	24	
Physical abuse	Yes	0	3	69	<0.001
	No	20	53	58	
Emotional abuse	Yes	0	3	93	<0.001
	No	20	53	34	
Contact sexual abuse	Yes	0	3	52	<0.001
	No	20	53	75	

Among the ACE domains, **sexual abuse** showed a statistically significant association with parental alcohol/drug use (OR = 3.019; 95% CI: 1.145–7.964; p = .046), indicating that children exposed to parental substance use were over three times more likely to report experiences of sexual abuse compared to those not exposed. While not statistically significant, a positive trend was also observed for **emotional abuse** (OR = 4.276; 95% CI: 0.858–21.309; p = .076), suggesting a potentially elevated risk that warrants further investigation. Other ACE domains, including exposure to violence (OR = 2.856), physical neglect (OR = 2.264), and emotional neglect (OR = 0.940), did not show statistically significant associations. Table 2

Table 2: Multinomial logistic regression analysis of parental alcoholism with household ACE domains

ACE Domain	OR	95% CI	p-value
Witnessing Domestic Violence	2.856	0.613 – 13.303	0.181
Emotional Neglect	0.940	0.360 – 2.454	0.899
Physical Neglect	2.264	0.774 – 6.623	0.136
Physical Abuse	0.560	0.208 – 1.508	0.251
Emotional Abuse	4.276	0.858 – 21.309	0.076
Sexual Abuse	3.019	1.145 – 7.964	0.046

The ACE domain that is most strongly and significantly linked to parental separation or divorce is sexual abuse. Additionally, physical neglect has a protective-looking odds ratio and is trending towards significance (p =.058). While emotional neglect trends upward (OR = 2.0), other domains such as emotional abuse, physical abuse, and emotional neglect do not exhibit any significant associations. Table 3

Table 3: Multinomial logistic regression analysis of living with single parent with household ACE domains

ACE Domain	OR	95% CI	p-value
Emotional neglect	2.007	0.709 – 5.680	.190
Physical neglect	0.355	0.122 – 1.038	.058
Physical abuse	1.331	0.444 – 3.990	.609
Emotional abuse	0.529	0.139 – 2.017	.351
Sexual abuse	11.204	3.495 – 35.919	.000

Discussion

Unfavourable family environment was significantly associated with higher ACE scores. The study found that 46.3% of participants experienced physical neglect, while 51.2% experienced emotional neglect in household. The strong association between physical and emotional neglect and a higher ACE score suggests that individuals who experience neglect from parents are more likely to report multiple ACEs in future. In Indian context, a cross sectional study from Kerala suggest neglect was the most common adverse childhood experience among the participants.[7] This was consistent with the literature from Tunisia done by Mlouki et al where students were exposed to more intra familial adverse events than social.[4]including behavioral addiction such as Internet Addiction (IA

The association between ACE scores and family environment was strong, with higher ACE scores indicating more exposure to the negative family environment. In our study 13.8% of individuals had exposure to alcohol and/or drug abusers in their

household, 17.2% to someone chronically depressed, mentally ill, institutionalized, or suicidal, 4.9% to an incarcerated household member, 12.3% to one or no parents, parental separation or divorce, 53.7% to a violent household member, 35.5% to physical abuse, 47.3% to emotional abuse, and 27.1% to contact sexual abuse. All were strongly associated with higher ACE scores. One of the most alarming findings across studies is the strong correlation between ACEs and health-risk behaviors, including substance abuse, smoking, early sexual activity, and violent behaviors. For example, Chanda and Priya Maurya [8] show a strong association between family drug use and risky behaviors in adolescents, such as suicidal thoughts and early sexual debut. According to a 2021 study by Fernandez et al thirty three percent of the sample had witnessed domestic violence in India.[9] Studies by Majid et al. suggest that household dysfunction—such as living with an alcoholic or mentally ill parent, or witnessing domestic violence—is particularly pervasive and can be linked with a high prevalence of physical abuse (28.7%) and emotional abuse (27.25%) among health campus students in Malaysia, underscoring that ACEs are prevalent even among higher education populations.[5] Similarly, the Dominican Republic study (Luft et al.) finds that 49.6% of adolescents report exposure to domestic violence, which is likely to contribute to a range of psychological issues, including poor mental health and violent behavior later in life.[10] Ramiro et al. also report that exposure to alcohol abuse and domestic violence correlates with risky sexual behavior and smoking in adult populations.[11]health-risk behaviors, and chronic disease conditions in adult life. STUDY POPULATION: One thousand and sixty-eight (1,068 This suggests that ACEs do not only affect immediate emotional and physical well-being, but also increase the likelihood of engaging in behaviors that further perpetuate poor health outcomes.

In an American setting, Merrick et al. highlighted the prevalence of emotional abuse, followed by parental separation and substance abuse, among the U.S. population.[3] Emotional abuse can have long-term effects on mental health, and this is supported by studies showing strong associations between ACEs and mental health issues, such as depression, anxiety, and suicidal tendencies.[12]such as violence victimization, substance misuse in the household, or witnessing intimate partner violence, have been linked to leading causes of adult morbidity and mortality. Therefore, reducing adverse childhood experiences is critical to avoiding multiple negative health and socioeconomic outcomes in adulthood. METHODS: Behavioral Risk Factor Surveillance System data were collected from 25 states that included state-added adverse childhood experience items during 2015-2017. Outcomes were self-reported status for coronary heart disease, stroke, asthma, chronic obstructive pulmonary disease, cancer (excluding skin cancer In contrast, Webster et al. report a slightly more optimistic statistic from their study on children, where 70.9% had no ACEs. However, the common adversities in their study were intrafamilial, such as parental separation and financial hardship.[6] The relationship between ACEs and mental health disorders is also well-documented in these studies. Swedo et al. report that emotional and physical abuse lead to poor mental health, with a significant portion of adolescents in the U.S. reporting mental health struggles. These findings align with other research linking ACEs to long-term conditions like PTSD, depression, and anxiety. This further emphasizes the need for early intervention to prevent the escalation of mental health issues in individuals with high ACE scores.[13]potentially traumatic events with lifelong negative impacts. Population-level data on ACEs among adolescents have historically relied on parent reports and excluded abuse-related ACEs. We present the self-reported prevalence of ACEs among a large population-based sample of US high school students. METHODS: Using cross-sectional, state-representative data from 16 states that included core ACE questions on their 2021 Youth Risk Behavior Survey, we estimate the prevalence of 8 individual (lifetime emotional, physical, or sexual abuse, physical neglect, witnessed intimate partner violence, household substance use, household poor mental health, incarcerated parent or guardian

Cultural and regional contexts play a critical role in shaping the prevalence and types of ACEs experienced by different populations. For example, studies from India and Vietnam suggest that drug abuse, domestic violence, and parental neglect are prevalent in these regions, but the specific patterns and social norms may vary.[8,14]the majority of research

has been conducted in high-income-countries and little is known about ACE prevalence in low-and-middle-income-countries (LMIC In India, the high rate of substance use within families and the association with risky behaviors point to a cultural context where substance abuse and its repercussions on children are significant concerns. Meanwhile, in Vietnam, factors such as emotional neglect and sexual abuse, although less frequently reported, remain critical areas that require attention. Additionally, the studies from developed nations, such as those in the U.S.,[12,13]such as violence victimization, substance misuse in the household, or witnessing intimate partner violence, have been linked to leading causes of adult morbidity and mortality. Therefore, reducing adverse childhood experiences is critical to avoiding multiple negative health and socioeconomic outcomes in adulthood. METHODS: Behavioral Risk Factor Surveillance System data were collected from 25 states that included state-added adverse childhood experience items during 2015-2017. Outcomes were self-reported status for coronary heart disease, stroke, asthma, chronic obstructive pulmonary disease, cancer (excluding skin cancer reveal a different set of challenges, where emotional abuse and parental separation seem to be more prominent. These differences may be attributed to varying socioeconomic conditions, cultural attitudes toward mental health, and family structures across countries. These studies point to the need for interventions that address family dynamics as a crucial part of preventing the intergenerational transmission of trauma.

These familial adversities are often deeply intertwined. For instance, substance use by a parent frequently co-occurs with domestic violence, while both are associated with higher risks of parental separation and mental health issues within the household.[9,15] Smoking and Substance Involvement Screening Test. A random-effects, two-stage individual patient data meta-analysis explained the associations between ACEs and substance misuse with adjustments for confounders such as sex and family structure. RESULTS: 1 in 2 participants reported child maltreatment ACEs and family level ACEs. Except for sexual abuse, males report more of every individual childhood adversity and are more likely to report misusing substances compared with females (87.3% vs. 12.7% Such cumulative exposure can compound psychological harm, a phenomenon consistent with the theory of toxic stress and its biological embedding over time.The study found that parental substance use is linked to increased emotional volatility, impaired caregiving, and household conflict, which can contribute to a hostile developmental environment. The non-significance of these associations may be due to limited statistical power or underreporting of certain ACEs due to stigma, fear, or normalization of violence in some familial contexts. Emotional and physical neglect showed elevated odds ratios, suggesting that substance-abusing caregivers may be less responsive to children's emotional and physical needs due to intoxication, withdrawal, or preoccupation with securing substances. The strong association with sexual abuse is particularly alarming, suggesting that in households affected by substance use, boundaries may be compromised and the family structure may be less capable of protecting children from external or intra-familial perpetrators. This highlights the need for early identification and intervention in substance-using households.

The study found a significant association between parental separation or absence and an increased risk of childhood sexual abuse (CSA). Children from separated or single-parent households had over eleven times higher odds of experiencing CSA compared to those from two-parent families. This aligns with recent Indian studies indicating high prevalence rates of CSA.[16] Emotional neglect did not reach statistical significance, but the observed odds ratio suggests a potential trend towards increased emotional vulnerability among children from disrupted families. Physical neglect showed a marginally significant inverse association, suggesting lower reported instances among children of separated parents.[17] This may reflect underreporting or differing perceptions of neglect, as well as the potential involvement of extended family or community support systems mitigating material deprivation.

Conclusion

This study highlights the profound impact of adverse childhood experiences (ACEs), particularly those rooted in household dysfunction such as parental substance use, mental illness, domestic violence, and disrupted family structures.

The findings from this study resonate with international literature while also shedding light on the unique sociocultural dynamics of Indian families. Cultural stigma, normalization of violence, and underreporting likely contribute to the complexity of capturing the full extent of ACEs. Nonetheless, the evidence presented reinforces the critical need for early identification of at-risk families, especially those affected by substance use and mental illness.

To break the intergenerational cycle of trauma, policy and public health efforts must focus on strengthening family support systems, integrating ACE screening into routine healthcare, and expanding community-based interventions. Empowering caregivers through mental health support and substance use rehabilitation, alongside school and community programs for children, is vital to creating safer and more nurturing environments that foster resilience and healing.

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Availability of data and material: The datasets or any other necessary material can be made available by the corresponding author upon reasonable request.

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