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Relationship between adverse childhood experiences and alexithymia among Patients with Substance Use Disorders in Egypt: A Cross-Sectional Study

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Abstract

Background

Adverse Childhood Experiences (ACEs) are potentially traumatic events occurring before the age of 18, including abuse, neglect, and household dysfunction. These experiences are strongly associated with emotional dysregulation and increased risk of substance use disorders (SUDs). Alexithymia, defined as difficulty in identifying, describing, and processing emotions with a tendency toward externally oriented thinking, is highly prevalent among individuals with SUDs and may serve as a mediating factor between childhood trauma and addictive behaviors.

Objectives

This study described childhood adversity and alexithymia and examined their association in Egyptian men receiving addiction treatment.

Methods

In this cross-sectional study, 105 eligible men aged 18–65 years were recruited consecutively from inpatient and outpatient addiction services at Abbasiya Psychiatric Hospital, Cairo, from 15 February to 15 May 2026. Diagnoses were established using the Arabic Structured Clinical Interview for Axis I Disorders under the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders. Childhood adversity and alexithymia were assessed with the Adverse Childhood Experiences International Questionnaire and the 20-item Toronto Alexithymia Scale. Analyses included Pearson correlation and exploratory multivariable linear regression.

Results

The mean cumulative adversity score was 6.69 ± 2.74; 87 participants (82.9%) reported four or more adversity domains. The mean alexithymia score was 64.49 ± 8.83. Seventy-two participants were classified as alexithymic (68.6%; 95% confidence interval 59.2–76.7%), 28 as borderline (26.7%), and five as non-alexithymic (4.8%). Cumulative adversity was positively correlated with alexithymia scores (r = 0.303; 95% confidence interval 0.118 to 0.467; p = 0.002). After adjustment for age, education, marital status, residence, main substance, and route of administration, each additional adversity domain was associated with a 0.93-point higher alexithymia score (95% confidence interval 0.303 to 1.556; p = 0.004). The model explained 21.3% of score variance (adjusted R^2 = 0.110).

Conclusions

Greater cumulative childhood adversity was associated with higher alexithymia scores among eligible men receiving addiction treatment at one Egyptian hospital. The findings describe a cross-sectional association and do not establish causality, mediation, or clinical benefit. Independent longitudinal studies incorporating functional and treatment outcomes are needed to assess clinical relevance and applicability to other populations.

Background

Adverse childhood experiences (ACEs) include abuse, neglect, and household dysfunction occurring before the age of 18 years. The original ACE study linked cumulative childhood adversity with adverse health outcomes in adulthood [1]. Subsequent work describes overlapping exposures and associations with psychological and physical health [2]. In a retrospective cohort study, childhood abuse, neglect, and household dysfunction were associated with illicit drug use [3]. These findings provide a rationale for examining childhood adversity in addiction treatment populations.

Alexithymia involves difficulty identifying feelings (DIF), difficulty describing feelings (DDF), and externally oriented thinking (EOT). The 20-item Toronto Alexithymia Scale (TAS-20) assesses these dimensions [4]. A review of problematic alcohol use described its co-occurrence with alexithymia and highlighted uncertainty about the relationship [5]. Findings from alcohol-related populations should not automatically be generalized to all substance use disorders (SUDs).

Childhood adversity and difficulties processing emotions may be related, but their coexistence does not establish a causal pathway. Neurodevelopmental research offers possible explanations for associations between adversities and later functioning [6]; such mechanisms require direct investigation. Clinical evidence from Egyptian treatment settings may help characterize how childhood adversity and alexithymia are distributed within these populations.

This study aimed to describe the frequency of exposure to ACE domains, cumulative ACE exposure, and TAS-20 total scores and classifications among men receiving addiction treatment at Abbasiya Psychiatric Hospital, and to examine the association between cumulative Adverse Childhood Experiences International Questionnaire (ACE-IQ) scores and TAS-20 total scores. TAS-20 subscale scores were summarized descriptively. Secondary exploratory analyses examined the association between ACE exposure categories and alexithymia classifications and evaluated the association between cumulative ACE-IQ and TAS-20 scores after adjustment for demographic and substance use characteristics. Individual covariate coefficients were reported as exploratory findings.

Methods

Study design and setting

This cross-sectional observational study was conducted in the outpatient addiction clinic and inpatient addiction unit at Abbasiya Psychiatric Hospital, Cairo, Egypt. All eligible patients were approached

consecutively during the recruitment period; those who provided written informed consent were enrolled. Recruitment took place over three months, from 15 February to 15 May 2026. Of the 105 participants, 60 (57.1%) were recruited from the outpatient addiction clinic and 45 (42.9%) from the inpatient addiction unit.

Participants

A total of 150 patients were screened for eligibility during the recruitment period. Of these, 45 did not meet the eligibility criteria. The remaining 105 eligible patients were enrolled and completed all study assessments; 60 were recruited from the outpatient addiction clinic and 45 from the inpatient addiction unit.

The study included 105 Egyptian male patients with substance-related diagnoses established using the Arabic Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I), based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) [7, 8]. Eligibility required age 18–65 years, male sex, Egyptian nationality, and a current substance-related diagnosis. Patients with acute intoxication, active withdrawal symptoms, other Axis I psychiatric disorders, or severe physical illness interfering with participation were excluded. Written informed consent was required. The final sample consisted of 105 eligible participants who completed all study assessment procedures.

Sample size calculation

The sample size was calculated to estimate the proportion of patients reporting childhood abuse or neglect. Based on Evren et al. (2009), who reported a prevalence of 57.0% among male substance-dependent inpatients [9], the single-proportion formula was used: $n = Z^2 \times p \times (1 - p) / d^2$, where $Z = 1.96$ for a 95% confidence level, $p = 0.57$ and $d = 0.10$ (absolute precision of 10 percentage points). The calculation yielded $n = (1.96^2 \times 0.57 \times 0.43) / 0.10^2 = 94.16$. Allowing for 10% nonresponse or incomplete assessment, the target sample was 94.16 / 0.90 = 104.62, rounded upward to 105 participants. This calculation addressed prevalence estimation and did not establish power for the exploratory multivariable regression analysis.

Procedures

Each participant underwent two assessment sessions. During the first session, lasting approximately 45–60 minutes, a semi-structured clinical sheet was completed and SCID-I was administered. During the second session, lasting approximately 30–45 minutes, ACE-IQ and TAS-20 were completed. For participants who required assistance with reading, the researcher read the questions verbatim from the questionnaire. Assessments were conducted in private to protect participants' confidentiality. The Arabic version of SCID-I, based on DSM-IV, was used. Diagnoses were therefore established according to DSM-IV criteria. Before the assessments, participants underwent a clinical examination for acute substance

intoxication and active withdrawal symptoms. Study procedures began only after participants were judged clinically stable and free of acute intoxication and active withdrawal.

Study tools

1. **Sociodemographic and clinical information**

The clinical sheet recorded age, nationality, marital status, education, residence, occupation, psychiatric and medical history, and family history of substance use or mental illness. Substance use variables included substance types, route of administration, age at onset, duration of use, number of relapses, and previous admissions.

2. **Adverse Childhood Experiences International Questionnaire (ACE-IQ)**

ACE-IQ assesses childhood adversity across 13 domains, including abuse, neglect, household dysfunction, bullying, community violence, and collective violence [10]. Binary domain scoring was used in this study: each adversity domain was coded as 1 when present and 0 when absent. The cumulative ACE-IQ score was calculated by summing the 13 domain indicators, yielding a possible range of 0–13, with higher scores indicating exposure to a greater number of adversity domains. All 105 participants had complete data for the 13 domain indicators. For categorical analyses, cumulative scores were grouped as 0, 1, 2, 3, or ≥4 adversity domains. No participant had a score of 0. These categories describe the number of exposed domains rather than a validated measure of adversity severity. The Arabic version used in this study was taken from the Saudi Arabian ACE-IQ study by Almuneef et al. (2016), which administered an Arabic version of the World Health Organization (WHO) questionnaire [11].

3. **Toronto Alexithymia Scale (TAS-20)**

TAS-20 contains 20 items rated on a five-point scale. Total scores range from 20 to 100. DIF contains seven items (possible total 7–35), DDF five items (5–25), and EOT eight items (8–40) [4]. For descriptive presentation on a common 1–5 response scale, each participant's subscale total was also divided by the number of items in that subscale. These mean item scores were not used as diagnostic thresholds or to rank clinical impairment. Scores were classified as follows: non-alexithymic, ≤51; borderline, 52–60; and alexithymic, ≥61. The Arabic version evaluated by El Abiddine et al. (2017) was administered in this study [12]. Original item responses were scored from 1 to 5. Items 4, 5, 10, 18, and 19 were reverse-scored as 6 minus the original response before calculating total and subscale scores. All 105 participants had complete responses to the 20 items; no missing-item imputation was required.

Statistical analysis

Data were managed in Microsoft Excel and analyzed using IBM SPSS Statistics, version 27, and Python with NumPy. Continuous variables were summarized as means and standard deviations, with medians, quartiles, and ranges for the main scores. Categorical variables were summarized as frequencies and

percentages. Confidence intervals for means and proportions were calculated using Student's t distribution and the Wilson method, respectively. The association between cumulative ACE-IQ and TAS-20 total scores was assessed using Pearson correlation with a Fisher-z 95% confidence interval. Associations between their classifications were assessed using the two-sided Fisher–Freeman–Halton exact test because expected cell counts were sparse.

Exploratory ordinary least-squares regression examined the association between cumulative ACE-IQ score and TAS-20 total score, adjusting for age, education, marital status, residence, main substance, and route of administration. Nominal predictors were dummy-coded, with reference categories specified in Table 4; education was entered as an ordinal variable. The derived ACE category was not included alongside the cumulative score. All 105 participants had complete data, and no imputation was required. Multicollinearity was assessed using variance inflation factors. Residual plots, Jarque–Bera and studentized Breusch–Pagan tests, squared ACE, age, and education terms, leverage, and Cook's distance were used to assess model assumptions and influence. Sensitivity analyses used HC3 robust standard errors, reduced and categorical-education models, and leave-one-out analyses. All p values were two-sided and unadjusted for multiple testing, with a nominal significance threshold of 0.05. Secondary analyses were interpreted as exploratory.

Results

Sociodemographic and clinical characteristics

The sample comprised 105 men aged 18–65 years (mean 31.71 ± 9.16 years). Mean age at substance use onset was 22.49 ± 5.43 years. Sociodemographic and clinical characteristics are presented in Tables 1 and 2. Sixty-nine participants (65.7%) were single, 21 (20.0%) married, and 15 (14.3%) divorced. Secondary education was the most frequent educational category (41, 39.0%). Sixty-nine participants (65.7%) lived in rural areas and 36 (34.3%) in urban areas. Polysubstance use was the most frequent main substance category (33, 31.4%), followed by synthetic cannabinoids (28, 26.7%), opioids (23, 21.9%), stimulants (18, 17.1%), and other substances (3, 2.9%). Smoking/inhalation was reported for 77 participants (73.3%), intravenous use for 13 (12.4%), and other routes for 15 (14.3%).

Table 1
Sociodemographic characteristics of participants

Characteristic	*n* or mean ± SD	%
Age (years)	31.71 ± 9.16	—
Marital status — single	69	65.7
Marital status — married	21	20.0
Marital status — divorced	15	14.3
Education level — primary	15	14.3
Education level — preparatory	25	23.8
Education level — secondary	41	39.0
Education level — university	21	20.0
Education level — postgraduate	3	2.9
Residence — urban	36	34.3
Residence — rural	69	65.7

n = 105. Values are counts and percentages for categorical variables or mean ± SD for age. Percentages use all 105 participants as the denominator and are rounded to one decimal place; totals may differ slightly from 100% because of rounding. A dash indicates that a percentage is not applicable. SD, standard deviation.

Table 2
Substance use and family history characteristics of participants

Characteristic	*n* or mean ± SD	%
Age at substance use onset (years)	22.49 ± 5.43	—
Duration of substance use (years)	8.98 ± 5.88	—
Main substance — opioids	23	21.9
Main substance — synthetic cannabinoids	28	26.7
Main substance — alcohol	0	0.0
Main substance — stimulants	18	17.1
Main substance — polysubstance use	33	31.4
Main substance — other substances	3	2.9
Route of administration — oral	0	0.0
Route of administration — smoking/inhalation	77	73.3
Route of administration — intravenous	13	12.4
Route of administration — intranasal	0	0.0
Route of administration — other	15	14.3
Number of relapses	3.98 ± 3.77	—
Number of previous admissions	2.95 ± 3.38	—
Family history of SUD — no	33	31.4
Family history of SUD — yes	72	68.6
Family history of mental disorder — no	61	58.1
Family history of mental disorder — yes	44	41.9

n = 105. Values are counts and percentages or mean ± SD for continuous variables. Age at onset and duration are in years. Percentages use all 105 participants as the denominator and are rounded to one decimal place; 0.0 denotes an observed count of zero. A dash indicates that a percentage is not applicable. SD, standard deviation; SUD, substance use disorder.

Adverse childhood experiences

Table 3 summarizes the reported ACE domains. Community violence was reported by 95 participants (90.5%), and domestic violence and peer violence by 77 each (73.3%). Household substance use was reported by 72 participants (68.6%), physical abuse and emotional neglect by 69 each (65.7%), physical neglect by 54 (51.4%), household mental illness by 49 (46.7%), emotional abuse by 41 (39.0%), sexual

abuse and an incarcerated household member by 33 each (31.4%), parental separation by 20 (19.0%), and war exposure by 13 (12.4%). All 105 participants had a cumulative domain score, with a mean of 6.69 ± 2.74 (95% CI for the mean 6.16–7.22), median 7 (first–third quartiles 5–9), and observed range 1–13. Two participants reported one domain (1.9%; 95% CI 0.5–6.7%), three reported two (2.9%; 95% CI 1.0–8.1%), 13 reported three (12.4%; 95% CI 7.4–20.0%), and 87 reported four or more (82.9%; 95% CI 74.5–88.9%). No participant had a domain score of zero (0.0%; 95% CI 0.0–3.5%).

Table 3
Adverse childhood experience domains and cumulative exposure categories

Domain or reported category	***n***	**%**
Emotional Abuse	41	39.0
Physical Abuse	69	65.7
Sexual Abuse	33	31.4
Emotional Neglect	69	65.7
Physical Neglect	54	51.4
Household substance use	72	68.6
Household mental illness	49	46.7
Parental Separation	20	19.0
Domestic Violence	77	73.3
Incarcerated household member	33	31.4
Peer Violence	77	73.3
Community Violence	95	90.5
War Exposure	13	12.4
ACE domain count — 0	0	0.0
ACE domain count — 1	2	1.9
ACE domain count — 2	3	2.9
ACE domain count — 3	13	12.4
ACE domain count — ≥4	87	82.9

n = 105. Each adversity domain was coded as present or absent, and the cumulative score counts the number of exposed domains (possible range 0–13). Percentages use all 105 participants as the denominator. Domains may overlap, so domain percentages need not sum to 100%. Exposure categories

are mutually exclusive and describe domain counts rather than validated adversity severity. ACE, adverse childhood experience.

Alexithymia

All 105 participants had a TAS-20 total score, with a mean of 64.49 ± 8.83 (95% CI for the mean 62.78–66.19), median 64 (first–third quartiles 57–69), and observed range 48–85. Seventy-two participants were classified as alexithymic (68.6%; 95% CI 59.2–76.7%), 28 as borderline (26.7%; 95% CI 19.1–35.8%), and five as non-alexithymic (4.8%; 95% CI 2.1–10.7%). Mean raw subscale totals were 23.61 ± 4.29 for DIF, 16.63 ± 3.07 for DDF, and 24.25 ± 4.10 for EOT. Corresponding mean item scores were 3.37 ± 0.61, 3.33 ± 0.61, and 3.03 ± 0.51, respectively, on the 1–5 response scale. These scores were calculated from the item responses with standard reverse scoring of items 4, 5, 10, 18, and 19. Internal consistency in the current sample was assessed using Cronbach's α: 0.763 for the total scale, 0.682 for DIF, 0.528 for DDF, and 0.571 for EOT.

Association between childhood adversity and alexithymia

Pearson correlation showed a positive association between cumulative ACE-IQ and TAS-20 total scores (n = 105, r = 0.303, 95% CI 0.118 to 0.467, p = 0.002). In the category-based analysis, nine of the 12 expected cell counts were below 5, including five below 1, making the usual asymptotic Pearson chi-square p value inappropriate. The two-sided Fisher–Freeman–Halton exact test showed an association between ACE exposure category and alexithymia classification (exact $p < 0.001$; Fig. 1). The small numbers in the lower ACE categories limit interpretation of individual category differences and do not support a consistent gradient across all categories.

Bars show participant counts, with counts labeled above each bar and total group sizes below the x-axis. ACE exposure categories contain 2, 3, 13, and 87 participants, respectively; no participant reported zero domains. TAS-20 classifications are non-alexithymic (≤ 51), borderline (52–60), and alexithymic (≥ 61). The two-sided Fisher–Freeman–Halton exact test yielded $p < 0.001$. The small lower-ACE groups limit category-specific interpretation. ACE, adverse childhood experience; TAS-20, 20-item Toronto Alexithymia Scale.

Multivariable linear regression

The exploratory model included 105 participants and 12 explanatory coefficients plus an intercept, giving 92 residual degrees of freedom (Table 4). Cumulative ACE score was positively associated with TAS-20 total score (B = 0.930, SE = 0.315, standardized β = 0.288, 95% CI 0.303 to 1.556, p = 0.004). Model fit was summarized by R^2 = 0.213, adjusted R^2 = 0.110, and $F(12, 92)$ = 2.074 (p = 0.026).

Each one-category increase in the ordinal education code was associated with an estimated 1.050-point lower TAS-20 score, but the confidence interval included zero (B = − 1.050, 95% CI − 2.724 to 0.624; p = 0.216). The association was also not statistically significant with HC3 robust standard errors (p = 0.237).

Relative to smoking/inhalation, the estimated adjusted TAS-20 difference was − 2.473 points for intravenous use (95% CI − 8.026 to 3.079; $p = 0.379$) and − 4.277 points for other routes (95% CI − 9.229 to 0.676; $p = 0.090$). Both confidence intervals included zero, and the joint route test was $F(2, 92) = 1.734$, $p = 0.182$. These negative point estimates indicate lower estimated scores relative to the reference category, but the primary model did not provide statistically significant evidence of a route association.

The ACE association remained significant with HC3 robust standard errors ($p = 0.002$) and in the reduced and categorical-education sensitivity models. Other coefficient estimates are reported in Table 4. VIFs for explanatory variables ranged from 1.12 to 1.79, indicating no marked multicollinearity in the revised model.

Residual plots showed some departures in the tails of the normal Q-Q plot. The Jarque-Bera test yielded $p = 0.189$, and the studentized Breusch-Pagan test yielded a Lagrange multiplier (LM) statistic = 10.681 (12 degrees of freedom, $p = 0.556$). Joint addition of squared ACE, age, and education terms yielded $F(3, 89) = 2.588$, $p = 0.058$; this result does not exclude nonlinear associations. Maximum leverage was 0.450, with four observations above $2k/n$. Nine observations had Cook's distance above $4/n$ (maximum = 0.094), and the largest absolute internally studentized residual was 2.669. No records were removed from the primary analysis. Across 105 leave-one-out analyses, the ACE coefficient ranged from 0.837 to 1.003 points per additional adversity domain, with conventional two-sided p values ranging from 0.001 to 0.009. Thus, the observed ACE association did not depend on a single participant.

Table 4
Exploratory multivariable linear regression of alexithymia total score

Predictor	*B*	SE	β	95% CI	*t*	*p*
Intercept	66.392	4.951	—	56.559 to 76.225	13.410	< 0.001
Cumulative ACE score	0.930	0.315	0.288	0.303 to 1.556	2.948	0.004
Age (per year)	−0.117	0.097	−0.122	−0.309 to 0.074	−1.216	0.227
Education (per category increase)	−1.050	0.843	−0.123	−2.724 to 0.624	−1.246	0.216
Marital status: married vs single	2.474	2.175	0.113	−1.846 to 6.794	1.137	0.258
Marital status: divorced vs single	0.228	2.484	0.009	−4.706 to 5.162	0.092	0.927
Residence: rural vs urban	−1.710	1.894	−0.092	−5.471 to 2.052	−0.903	0.369
Main substance: synthetic cannabinoids vs opioids	−2.109	2.461	−0.106	−6.996 to 2.778	−0.857	0.394
Main substance: stimulants vs opioids	2.297	2.710	0.099	−3.085 to 7.680	0.848	0.399
Main substance: polysubstance vs opioids	0.443	2.314	0.023	−4.153 to 5.040	0.192	0.849
Main substance: other vs opioids	0.545	5.293	0.010	−9.968 to 11.057	0.103	0.918
Route: intravenous vs smoking/inhalation	−2.473	2.796	−0.093	−8.026 to 3.079	−0.885	0.379
Route: other vs smoking/inhalation	−4.277	2.494	−0.170	−9.229 to 0.676	−1.715	0.090

Ordinary least-squares linear regression; $n = 105$; outcome, TAS-20 total score. *B*, unstandardized coefficient; SE, conventional standard error; β, standardized coefficient; CI, confidence interval. The intercept has no standardized coefficient. Age is per year; education is per category increase from primary to postgraduate. Reference categories are single marital status, urban residence, opioids, and smoking/inhalation. $R^2 = 0.213$; adjusted $R^2 = 0.110$; $F(12, 92) = 2.074$, $p = 0.026$. Two-sided *p* values and 95% CIs are unadjusted for multiple testing. Covariate selection and secondary tests are exploratory. ACE; adverse childhood experience, TAS-20; 20-item Toronto Alexithymia Scale.

Discussion

Cumulative childhood adversity was positively associated with current alexithymia scores among men receiving addiction treatment, including after exploratory covariate adjustment. Evren et al. found a positive correlation between the number of childhood abuse or neglect types and TAS-20 scores among 159 male substance-dependent inpatients in Turkey [9]. This provides a relevant comparison, although their narrower adversity questionnaire and inpatient sample differ from the ACE-IQ and mixed inpatient–outpatient sample used here. Broader evidence links childhood maltreatment with mental health outcomes and drug use [13], but does not by itself establish the specific adversity–alexithymia association observed in this study.

Violence-related exposures were frequently reported. Comparisons of adversity frequencies require attention to domain coverage, scoring, recruitment, and disclosure. ACE-IQ includes exposures beyond those covered by narrower abuse and neglect measures, so their prevalence estimates are not directly interchangeable. These hospital data cannot establish the prevalence of adversity among Egyptian adults generally.

Seventy-two participants (68.6%) met the TAS-20 alexithymia cutoff. Evren et al. reported 45.3% using the same score threshold, but 115 of their 159 participants had alcohol dependence [9]. Cruise and Becerra's review reported alexithymia frequencies of 30–49% in alcohol-dependent samples [5]. Differences in substance profiles, eligibility, treatment setting, and assessment may contribute to the differing proportions; these comparisons do not demonstrate a country effect or greater clinical severity in the present sample.

EOT had the highest raw subscale total and the largest number of items. Mean item scores were 3.37 for DIF, 3.33 for DDF, and 3.03 for EOT; these are descriptive responses rather than a ranking of impairment. Subscale differences were not tested, similar means do not establish equivalence, and the low internal consistency estimates for DDF and EOT limit interpretation.

The ACE association persisted in sensitivity analyses, although the model explained a limited proportion of score variation. Education had a negative point estimate, but its confidence interval included zero; this does not establish either a protective effect or the absence of an association. Its coefficient represents a category increase rather than a year of schooling, and estimates for postgraduate education are based on only three participants. Route contrasts and the joint route test were not significant in the primary model, with some sensitivity results varying by specification. Nominal route codes do not represent a severity gradient. These secondary findings remain exploratory.

Neurodevelopmental and neuroimaging research provides a theoretical context for adversity and alexithymia [6, 14]. No neural, physiological, or interoceptive measures were collected here, and alexithymia was assessed once. The study therefore cannot identify a mechanism, establish that adversity caused alexithymia, or demonstrate mediation of substance use through alexithymia. All participants had substance use disorders, precluding comparison of disorder occurrence between exposed and unexposed populations.

The adjusted estimate of 0.93 TAS-20 points per additional adversity domain describes a between-person association, not a treatment effect. No clinically important score difference was evaluated, and classification cutoffs do not establish the importance of this coefficient. Functional outcomes, prospective relapse, treatment response, and benefits of screening or intervention were not assessed. Clinical relevance requires further study.

Limitations

- The cross-sectional design and single assessment of alexithymia prevent determination of when emotional processing difficulties developed in relation to adversity and substance use. Causality, mediation, and reciprocal effects cannot be inferred.
- All participants had substance use disorders, limiting conclusions about the occurrence of these disorders. Functional outcomes, prospective relapse, and treatment response were not evaluated, so the clinical importance of the association remains uncertain.
- Consecutive recruitment from one hospital yielded a treatment-seeking sample of Egyptian men who met eligibility criteria and completed the assessments and exclusion of other Axis I disorders limits generalizability of the results.
- Childhood adversity and alexithymia were assessed by self-report, with potential recall and disclosure biases. Private administration and verbatim reading assistance may facilitate completion but do not eliminate these biases or possible effects of assisted administration.
- ACE domain counts summarize exposure rather than its severity, timing, or duration. Lower internal consistency for the TAS-20 subscales, particularly DDF and EOT, limits dimension-specific interpretation. The analysis addressed cumulative adversity and overall alexithymia and did not test associations between individual ACE domains and particular alexithymia dimensions.
- The sample size calculation addressed prevalence estimation rather than regression power. The post hoc model estimated 13 parameters from 105 participants, creating a risk of overfitting and imprecision in uncommon categories.
- Residual confounding remains possible, including from omitted substance use characteristics. Residual plots showed tail departures, and the curvature test was close to the nominal significance threshold; nonsignificant diagnostic tests do not establish that assumptions hold. Leave-one-out analyses supported the ACE association, but sensitivity to combinations of influential observations was not assessed. Sparse lower ACE categories limit category-specific interpretation despite use of an exact test.

Conclusions

Greater cumulative childhood adversity was associated with higher alexithymia scores among Egyptian men aged 18–65 years who met the study eligibility criteria and completed assessments at Abbasiya Psychiatric Hospital. The association persisted after exploratory covariate adjustment, but these cross-sectional findings do not establish causality, mediation, or clinical benefit. Independent longitudinal

studies incorporating functional outcomes, relapse, and treatment response are needed to evaluate clinical relevance and applicability to other patient groups and settings.

Abbreviations

ACE
adverse childhood experience
ACE-IQ
Adverse Childhood Experiences International Questionnaire
CI
confidence interval
DDF
difficulty describing feelings
DIF
difficulty identifying feelings
DSM-IV
Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition
EOT
externally oriented thinking
HC3
heteroscedasticity-consistent covariance estimator, type 3
LM
Lagrange multiplier
Q-Q
quantile–quantile
SCID-I
Structured Clinical Interview for DSM-IV Axis I Disorders
SD
standard deviation
SE
standard error
SUD
substance use disorder
TAS-20
20-item Toronto Alexithymia Scale
VIF
variance inflation factor
WHO
World Health Organization.

Declarations

Ethics approval and consent to participate

The study was approved by the Research Ethics Committee of the Faculty of Medicine, Ain Shams University (approval number: FMASU MS 352/2025). Written informed consent was obtained from all participants.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used in this study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

NZH supervised the study and contributed to manuscript writing. KYG collected the data. OMA, DAMM, and SMNA contributed to data analysis, manuscript writing and editing. All authors reviewed and approved the final manuscript.

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Figures

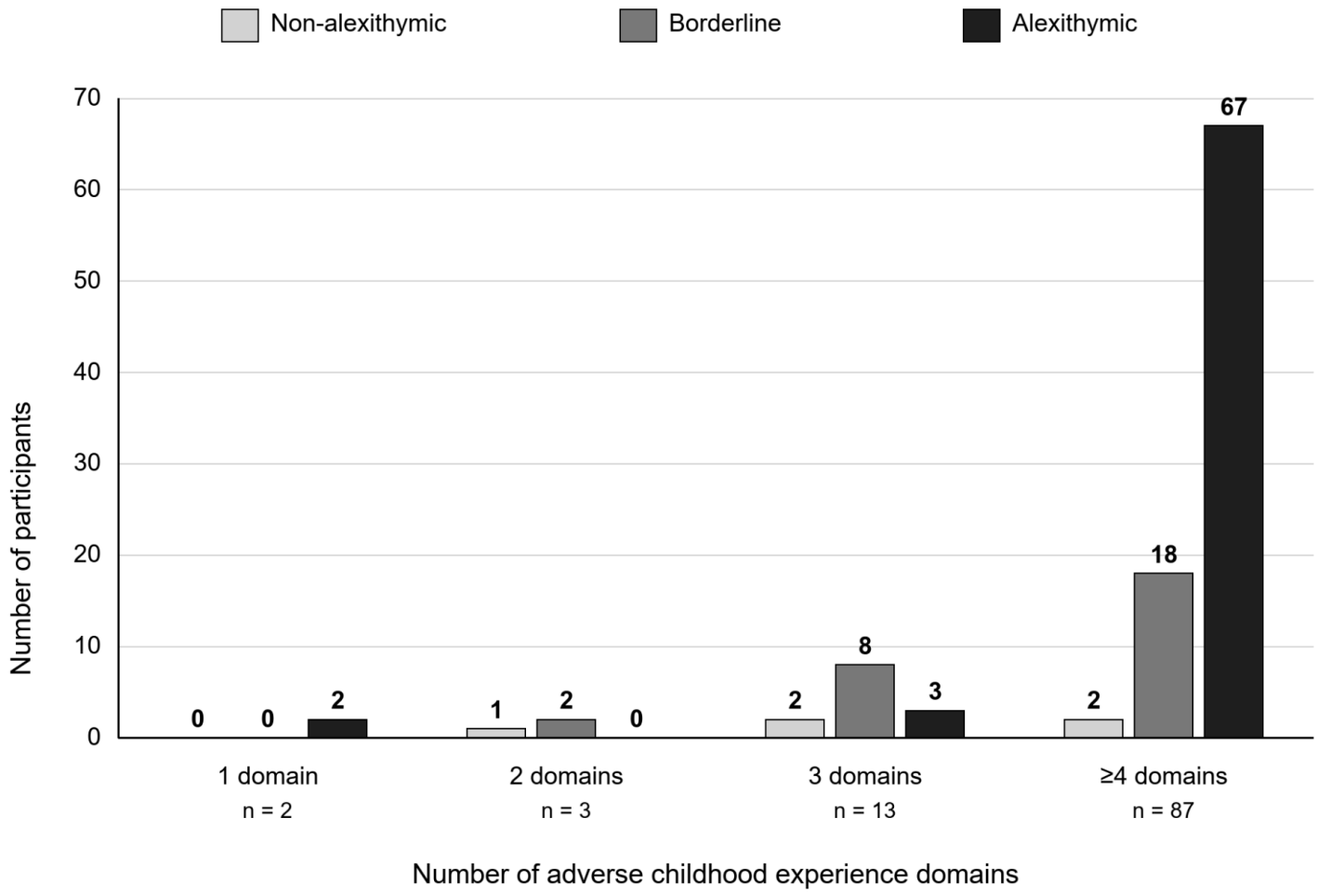


Figure 1

Childhood adversity categories and alexithymia classification