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# Using the social cognitive theory to understand the risk factors of adverse childhood experiences among youths in Malaysia: A cross-sectional study

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## Abstract

**Introduction:** Adverse childhood experiences (ACEs) are traumatic events that occur in childhood (before the age of 18 years) and have potentially long-lasting negative impacts on health, behaviour and life opportunities. This study aimed to identify the factors associated with ACEs among youths.

**Methods:** Undergraduate students, aged 18 years and older, from a public university were randomly sampled based on a list of eligible respondents. Data were collected using a validated and pre-tested online survey.

**Results:** A total of 372 undergraduate students, with a mean age of 21.8 (SD=1.41) years, participated in this study. Emotional neglect (46.2%) and community violence (38.7%) were the commonest ACE subtypes. Health problems/disabilities (adjusted odds ratio [AOR]=3.578, 95% confidence interval [CI]=1.250–10.246) had the highest likelihood towards ACEs, followed by father's smoking behaviour (AOR=2.130, 95% CI=1.163–3.898) and authoritarian parenting style (AOR=2.077, 95% CI=1.410–3.058).

**Conclusion:** The high prevalence of ACEs among the respondents reflects their public health importance. Targeted interventions are crucial among those at risk, particularly children with health problems or disabilities.

## Introduction

Adverse childhood experiences (ACEs) are common, preventable, potentially traumatic events that occur among individuals aged <18 years and are associated with numerous negative outcomes.[1] Approximately 64% of adults in the United States have reported that they had experienced at least one type of ACE before the age of 18 years, and nearly one in six (17.3%) adults has indicated that they had experienced four or more types of ACEs.1 Furthermore, three in four high school students in the United States have reported experiencing one or more ACEs, and one in five has experienced four or more ACEs.[2] The most common ACEs reported among high school students include emotional abuse, physical abuse and living in a household affected by poor mental health or substance abuse.[2]

Among the young adult population, including university or college students, an alarming prevalence has been reported, ranging from 50.8% to 88.0% for at least one ACE and from 8.0% to 41.3% for four or more ACEs.[3–9] The prevalence has varied across countries due to differences in socioeconomic background, which make young adults more vulnerable to ACEs. Most available scientific data on the prevalence of ACEs have originated from developed regions.[3,9–15]

Exposure to ACEs, including maltreatment and family dysfunction, is a major contributor to the global burden of disease and disability.[16] Research has shown that ACEs have cascading life-

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course effects on health-harming behaviours (e.g. early substance use or smoking), mental health (e.g. depression or anxiety), physical health (e.g. cardiovascular disease, obesity or cancer) and relational functioning (e.g. intimate partner violence).[17] According to Felitti et al.,[18] adults who had experienced four or more ACEs had a 12-fold higher prevalence of health risks such as alcoholism, drug use, depression and suicide attempts. According to the systematic review and meta-analysis conducted by Hughes et al.,[17] individuals who had ACEs (during childhood or adolescence) tended to have more physical and mental health problems as adults than those who had no ACEs, ultimately predisposing them to greater premature mortality. Problematic drug use as well as interpersonal and self-directed violence was found to have the strongest association with ACEs, followed by sexual risk-taking, mental illness and problematic alcohol use.[17] Other outcomes that emerged from this systematic review were smoking, heavy alcohol use, poor self-rated health, cancer, heart disease and respiratory disease, with weak or modest associations reported for physical inactivity, overweight or obesity and diabetes.[17]

Preventing ACEs reduces not only the probability of risky behaviours but also the development of debilitating chronic disease and eventually improves life opportunities and well-being.[11,19] Estimates show that up to 1.9 million heart disease cases and 21 million depression cases could have been avoided by preventing ACEs.[20] Specifically, preventing ACEs could reduce suicide attempts among high school students by as much as 89%, prescription pain medication misuse by as much as 84% and persistent feelings of sadness or hopelessness by as much as 66%.[2]

The social cognitive theory (SCT) was employed in this study to better understand the risk factors contributing to ACEs. This theory was developed by Albert Bandura as a comprehensive theory of behavioural change and learning that emphasises the role of observational learning, social experiences and reciprocal interactions between individuals and their environment.[21] The SCT highlights the role of observation in learning behaviours, which is particularly valuable for explaining how individuals acquire new skills or behaviours without direct experience. This makes the theory especially relevant in educational, social and clinical settings where role models and peer behaviours strongly influence learning. It involves a holistic approach to understanding behavioural change, as it integrates both cognitive (internal) and environmental (external) influences on behaviour. It also provides a more realistic approach, as it accounts for the complexities of real-life influences rather than viewing behaviour as simply a reaction to external stimuli.

## Methods

This cross-sectional study was conducted among undergraduate students of Universiti Putra Malaysia, Serdang campus, aged 18 years and older. Eligible respondents were recruited using stratified proportionate probability sampling among 13 consented centres including 12 faculties and one school. Each faculty and school served as the stratum, and the number of samples in each stratum was determined proportionally based on the estimated sample size, which was calculated using the RAND formula. The sample was selected through simple random sampling based on a list of eligible respondents from each stratum using computer-generated numbers in Microsoft Excel.

The selected eligible participants were approached via email to obtain informed consent as well as to distribute the Google Forms link for the validated self-administered questionnaire. Those who did not respond to the email, refused to participate or did not complete the questionnaire were excluded from this study.

Data were collected from April to May 2023 using a valid and reliable self-administered questionnaire, consisting of six sections assessing the following: ACEs, sociodemographic information (age, sex, ethnicity, risk behaviour, health status, disability or academic details), family information (parental age at the respondent's birth, parental educational level, parental employment status, household income and parental risk behaviour), perceived social support (12 questions adopted from the Multidimension Scale of Perceived Social Support), personality (10 questions adopted from the Big-Five-10 items) and perceived parenting style (30 questions adopted from the Perceived Parenting Style Scale). The questionnaire was validated and tested for reliability, with Cronbach's alpha values ranging from 0.6 to 0.96, reflecting good-to-excellent internal consistencies.

The questions on ACEs were adopted from the WHO ACE International Questionnaire,[22] which is

a well-established and comprehensive tool used to assess 13 types of ACEs, including neglect, abuse, household dysfunction (living with an alcoholic/substance misuser, mentally ill/suicidal household member or incarcerated household member, witnessing a household member being treated violently or experiencing parental separation/divorce) and community and collective violence. Responses are measured using a 3-point Likert scale, with response options of 'yes', 'no' or 'unsure'. A score of 1 is given to all 'yes' responses except for emotional neglect, where a score of 1 is given to 'no' responses. The total possible score ranges from 0 to 13, which is later categorised into fewer than four types of ACEs and four and more types of ACEs.[18] A cut-off point of 4 was chosen based on the consistent association reported between ACEs and adverse health outcomes.[23]

The dataset underwent a thorough review to identify and address duplicates, missing values, errors and outliers before proceeding with the analysis. Continuous variables were assessed for normality through visual inspection and statistical testing, with the significance level set at 0.05. Categorical variables were presented as frequencies and percentages and continuous variables as central tendencies and dispersion measures. Bivariate analyses were performed using simple regression tests to explore associations between the independent and dependent variables. Variables with P-values of ≤0.25 were included in a multivariate logistic regression model to identify potential predictors. Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were reported, with statistical significance defined as P<0.05. Data entry and statistical analysis were performed using the IBM Statistical Package for the Social Sciences version 28.0 (IBM Corp., Armonk, NY, USA), with a P-value of <0.05 also set as the significance level for the analysis.

## Results

Table 1 shows the background characteristics of the 372 students who participated in this study. The majority of the respondents had experienced fewer than four ACEs (80.4%). Among the nine subtypes of ACEs, emotional neglect (46.2%), community violence (38.7%) and household dysfunction (37.6%) were the top three most common ACEs reported.

**Table 1.** Descriptive findings (N=372).

| Variable | Mean ± SD | n | % |
|---|---|---|---|
| Prevalence of ACEs | | | |
| <4 | | 299 | 80.4 |
| ≥4 | | 73 | 19.6 |
| ACE subtype | | | |
| 1. Emotional neglect | | 172 | 46.2 |
| 2. Physical neglect | | 19 | 5.1 |
| 3. Household dysfunction: | | 140 | 37.6 |
| a. Living with an alcoholic/substance misuser | | 6 | 1.6 |
| b. Living with an incarcerated household member | | 4 | 1.1 |
| c. Living with a mentally ill/suicidal household member | | 22 | 5.9 |
| d. Witnessing a household member being treated violently | | 52 | 14.0 |
| e. Experiencing parental separation/divorce | | 56 | 15.1 |
| 4. Emotional abuse | | 73 | 19.6 |
| 5. Physical abuse | | 30 | 8.1 |
| 6. Sexual abuse | | 33 | 8.9 |
| 7. Bullying | | 76 | 20.4 |
| 8. Community violence | | 144 | 38.7 |
| 9. Collective violence | | 21 | 5.6 |
| **A. Personal factors** | | | |
| Age | 21.8±1.41 | | |
| Sex | | | |
| Male | | 78 | 21.0 |
| Female | | 294 | 79.0 |
| Race | | | |
| Malay | | 283 | 76.1 |
| Chinese | | 57 | 15.3 |
| Indian | | 11 | 3.0 |
| Others | | 21 | 5.6 |
| Perceived health status | | | |
| Healthy | | 350 | 94.1 |
| Having a health problem/disability | | 22 | 5.9 |

**Table 1. Continued**

| Variable | Mean ± SD | n | % |
|---|---|---|---|
| Year of study | | | |
| First | | 108 | 29.0 |
| Second | | 123 | 33.1 |
| Third | | 82 | 22.0 |
| Fourth or higher | | 59 | 15.9 |
| Faculty and school | | | |
| Faculty of Agriculture | | 38 | 10.2 |
| Faculty of Biotechnology | | 31 | 8.3 |
| Faculty of Human Ecology | | 10 | 2.7 |
| Faculty of Education | | 49 | 13.2 |
| Faculty of Engineering | | 18 | 4.8 |
| Faculty of Language and Communication | | 32 | 8.6 |
| Faculty of Food Technology | | 32 | 8.6 |
| Faculty of Forestry | | 25 | 6.7 |
| Faculty of Medicine | | 55 | 14.8 |
| Faculty of Architecture | | 6 | 1.6 |
| Faculty of Science Computer | | 23 | 6.2 |
| Faculty of Sciences | | 27 | 7.3 |
| School of Business | | 26 | 7.0 |
| **B. Environmental factors** | | | |
| Father's age at respondent's birth | 33.5±6.34 | | |
| Father's educational level | | | |
| Low | | 195 | 52.4 |
| High | | 177 | 47.6 |
| Father's employment status | | | |
| Paid employment | | 329 | 88.4 |
| Unemployed | | 43 | 11.6 |
| Father's risk behaviour | | | |
| a. Ever smoked | | | |
| No | | 191 | 51.3 |
| Yes | | 181 | 48.7 |
| b. Ever consumed alcohol | | | |
| No | | 328 | 88.2 |
| Yes | | 44 | 11.8 |
| c. Ever used illicit drugs | | | |
| No | | 370 | 99.5 |
| Yes | | 2 | 0.5 |
| Mother's age at respondent's birth | 30.3±5.74 | | |
| Mother's educational level | | | |
| Low | | 214 | 57.5 |
| High | | 158 | 42.5 |
| Mother's employment status | | | |
| Paid employment | | 171 | 46.0 |
| Unemployed | | 201 | 54.0 |
| Mother's risk behaviour | | | |
| a. Ever smoked | | | |
| No | | 369 | 99.2 |
| Yes | | 3 | 0.8 |
| b. Ever consumed alcohol | | | |
| No | | 343 | 92.2 |
| Yes | | 29 | 7.8 |
| c. Ever used illicit drugs | | | |
| No | | 371 | 99.7 |
| Yes | | 1 | 0.3 |
| Household income | | | |
| B40 (<RM 5000) | | 213 | 57.3 |
| M40 (RM 5000–12,000) | | 124 | 33.3 |
| T20 (>RM 12,000) | | 35 | 9.4 |
| Parenting style | | | |
| Authoritative | 3.7±0.75 | | |
| Authoritarian | 2.5±0.76 | | |
| Permissive | 2.2±0.89 | | |

**Table 1. Continued**

| Variable | Mean ± SD | n | % |
|---|---|---|---|
| Social support | | | |
| a. Total | | | |
| Low | | 38 | 10.2 |
| Moderate | | 143 | 38.4 |
| High | | 191 | 51.3 |
| b. Significant others | | | |
| Low | | 48 | 12.9 |
| Moderate | | 130 | 34.9 |
| High | | 194 | 52.2 |
| c. Family | | | |
| Low | | 51 | 13.7 |
| Moderate | | 134 | 36.0 |
| High | | 187 | 50.3 |
| d. Friends | | | |
| Low | | 43 | 11.6 |
| Moderate | | 142 | 38.2 |
| High | | 187 | 50.3 |
| **C. Behavioural factors** | | | |
| Risk behaviour | | | |
| a. Ever smoked/used e-cigarettes | | | |
| No | | 341 | 91.7 |
| Yes | | 31 | 8.3 |
| b. Ever consumed alcohol | | | |
| No | | 322 | 86.6 |
| Yes | | 50 | 13.4 |
| c. Ever used illicit drugs | | | |
| No | | 369 | 99.2 |
| Yes | | 3 | 0.8 |
| d. Ever had multiple sexual partners | | | |
| No | | 370 | 99.5 |
| Yes | | 2 | 0.5 |
| Personality | | | |
| a. Extraversion | 2.8±0.71 | | |
| b. Agreeableness | 3.6±0.74 | | |
| c. Conscientiousness | 2.9±0.79 | | |
| d. Neuroticism | 3.1±0.84 | | |
| e. Openness | 3.2±0.68 | | |

Under the category of personal factors, the mean age of the respondents was 21.8 (SD=1.41) years. The majority were women (79%), were Malay (76.1%) and perceived themselves as healthy (94.1%). Conversely, the descriptive analysis of the environmental factors revealed a mean paternal age of 33.5 (SD=6.34) years and a mean maternal age of 30.3 (SD=5.74) years. The overall sample was dominated by those of low household income (less than RM 5000 per month; 57.3%); those who had high social support (51.3%); those who received support from family members (50.3%), friends (50.3%) and significant others (52.2%); and those practising authoritative parenting (3.7±0.75). Among the fathers, the majority had a low educational level (52.4%) and were employed (88.4%). Approximately 48.7% ever smoked; 11.8% consumed alcohol; and 0.5% had a history of using illicit drugs. In contrast, the majority of the mothers also had a low educational level (57.5%). Among them, 54.0% were unemployed; 0.8% were smokers; 7.8% consumed alcohol; and 0.3% had a history of using illicit drugs. Among the respondents, 91.7% were non-smokers; 13.4% consumed alcohol; 0.8% had a history of using illicit drugs; and 0.5% had a history of multiple sexual partners. Agreeableness yielded the highest mean score among the personality types (3.6±0.74).

**Figure 1** provides a visual presentation of the distribution of the ACE scores. Only 23.4% of the respondents never experienced (0) ACEs, while 25.5% had an ACE score of 1, representing the largest group.

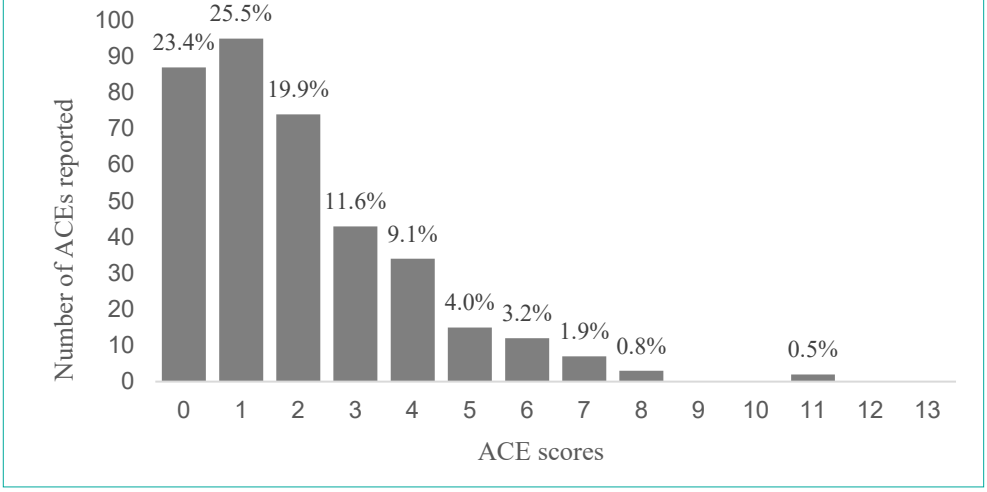



**Figure 1.** Distribution of the ACE scores. ACE: adverse childhood experience.

The association between the variables was tested using simple logistic regression (**Table 2**). Significant associations were observed between ACEs and health status, personality traits, paternal smoking status, household income, parenting style and social support (P<0.05). However, household income did not predict the occurrence of ACEs among the respondents in the multiple logistic regression (**Table 3**). Variables with P-values of less than 0.25 in the simple logistic regression analysis were included in the multivariate analysis.

**Table 2.** Simple logistic regression analysis of the independent variables and ACE scores (N=372).

| Independent variable | Crude OR (95% CI) | P-value |
|---|---|---|
| **Personal factors** | | |
| Age | 0.970 (0.88, 1.166) | 0.75 |
| Sex | | |
| Male | Ref. | |
| Female | 1.148 (0.602, 2.187) | 0.675 |
| Ethnicity | | |
| Malay | Ref. | |
| Non-Malay | 0.957 (0.523, 1.751) | 0.887 |
| Health status | | |
| Healthy | Ref. | |
| Having a health problem/disability | 2.505 (1.009, 6.221) | 0.048* |
| **Behavioural factors** | | |
| Personality | | |
| Extraversion | 1.074 (0.895, 1.290) | 0.441 |
| Agreeableness | 0.812 (0.681, 0.969) | 0.021* |
| Conscientiousness | 0.750 (0.628, 0.896) | 0.001* |
| Neuroticism | 1.275 (1.089, 1.493) | 0.002* |
| Openness | 1.343 (1.114, 1.619) | 0.002* |
| Risk behaviour | | |
| a. Ever smoked | | |
| No | Ref. | |
| Yes | 0.584 (0.198, 1.725) | 0.330 |
| b. Ever consumed alcohol | | |
| No | Ref. | |
| Yes | 1.183 (0.573, 2.440) | 0.650 |
| c. Ever used illicit drugs | | |
| No | Ref. | |
| Yes | 0.000 (0.000, -) | 0.999 |
| d. Ever had multiple sexual partners | | |
| No | Ref. | |
| Yes | 4.139 (0.256, 66.964) | 0.317 |
| **Environmental factors** | | |
| Father's age at respondent's birth | 1.001 (0.962, 1.042) | 0.950 |

**Table 2. Continued**

| Independent variable | Crude OR (95% CI) | P-value |
|---|---|---|
| Father's educational level | | |
| Low | Ref. | |
| High | 0.773 (0.461, 1.297) | 0.330 |
| Father's employment status | | |
| Unemployment | Ref. | |
| Paid employment | 0.588 (0.286, 1.210) | 0.149 |
| Father's risk behaviour | | |
| a. Ever smoked | | |
| No | Ref. | |
| Yes | 2.396 (1.404, 4.090) | 0.001* |
| b. Ever consumed alcohol | | |
| No | Ref. | |
| Yes | 1.061 (0.485, 2.318) | 0.883 |
| c. Ever used illicit drugs | | |
| No | Ref. | |
| Yes | 1.230 (0.195, 7.761) | 0.825 |
| Mother's age at respondent's birth | 1.022 (0.978, 1.069) | 0.328 |
| Mother's educational level | | |
| Low | Ref. | |
| High | 0.700 (0.412, 1.190) | 0.187 |
| Mother's employment status | | |
| Unemployment | Ref. | |
| Paid employment | 0.963 (0.576, 1.609) | 0.884 |
| Mother's risk behaviour | | |
| a. Ever smoked | | |
| No | Ref. | |
| Yes | 2.062 (0.184, 23.061) | 0.557 |
| b. Ever consumed alcohol | | |
| No | Ref. | |
| Yes | 0.450 (0.132, 1.530) | 0.201 |
| c. Ever used illicit drugs | | |
| No | Ref. | |
| Yes | 0.000 (0.000, -) | 1.000 |
| Household income | | |
| B40 | Ref. | |
| M40 | 0.518 (0.284, 0.946) | 0.032* |
| T20 | 0.674 (0.265, 1.717) | 0.409 |
| Parenting style | | |
| Authoritative | 0.430 (0.302, 0.613) | <0.001* |
| Authoritarian | 2.064 (1.477, 2.884) | <0.001* |
| Permissive | 1.887 (1.416, 2.515) | <0.001* |
| Social support | | |
| Total | | |
| Low | Ref. | |
| Moderate | 0.534 (0.255, 1.120) | 0.097 |
| High | 0.134 (0.060, 0.303) | <0.001* |
| a. Significant others | | |
| Low | Ref. | |
| Moderate | 0.524 (0.255, 1.077) | 0.079 |
| High | 0.295 (0.144, 0.604) | <0.001* |
| b. Family | | |
| Low | Ref. | |
| Moderate | 0.277 (0.140, 0.549) | <0.001* |
| High | 0.096 (0.046, 0.202) | <0.001* |
| c. Friends | | |
| Low | Ref. | |
| Moderate | 0.338 (0.164, 0.698) | 0.003* |
| High | 0.186 (0.089, 0.389) | <0.001* |

*P<0.05.

**Table 3.** Final model for the predictors of adverse childhood experiences (N=372).

| Independent variable | Adjusted OR (95% CI) | P-value |
|---|---|---|
| Health status | | |
| Healthy | Ref. | |
| Having a health problem/disability | 3.578 (1.250, 10.246) | 0.018* |
| Personality | | |
| Conscientiousness | 0.813 (0.664, 0.996) | 0.046* |
| Openness | 1.289 (1.036, 1.604) | 0.023* |
| Father's risk behaviour (ever smoked) | | |
| No | Ref. | |
| Yes | 2.130 (1.163, 3.898) | 0.014* |
| Parenting style | | |
| Authoritarian | 2.077 (1.410, 3.058) | <0.001* |
| Social support (family) | | |
| Low | Ref. | |
| Moderate | 0.297 (0.140, 0.634) | 0.002* |
| High | 0.128 (0.057, 0.286) | <0.001* |
| Constant | 0.045 | 0.010 |

Note: Model generated via forward LR method; multicollinearity and interaction terms were checked; Cox and Snell R2=0.186, Nagelkerke R2=0.296; Hosmer and Lemeshow test (P=0.583); classification table (overall percentage=82.3%; AUROC=0.800). *P<0.05.

The respondents with a health problem or disability had 3.6 times higher odds of experiencing ACEs (AOR=3.578, P=0.018). Conversely, for each unit increase in the conscientiousness and openness personality scores, the odds towards ACEs were 0.8 (AOR=0.813, P=0.046) and 1.3 (AOR=1.289, P=0.023), respectively. The respondents who were more conscientious were less likely to have experienced ACEs, and those who were more open had a higher likelihood towards ACEs. The respondents whose fathers were smokers and who had moderate and high social support had 2.1 (AOR=2.130, P=0.014), 0.3 (AOR=0.297, P=0.002) and 0.13 (AOR=0.128, P<0.001) times higher odds of experiencing ACEs, respectively. Additionally, authoritarian parenting style was associated with 2.077 (P<0.001) times higher odds towards ACEs.

## Discussion

The findings revealed that a large proportion of the students who participated in this study had experienced ACEs. Earlier retrospective studies have also reported a high prevalence of ACEs among university students ranging from 51.7% to 88%.[3–7] Furthermore, available scientific evidence among adults shows that over 50% have been exposed to at least one individual ACE and that around 30% have been exposed to two or more individual ACEs.[22,23] Emotional neglect and community violence were the two most common subtypes of ACEs reported in this study. Emotional neglect occurs when a child's emotional needs are consistently ignored, dismissed or unaddressed by caregivers (parents or guardians). Unlike physical neglect, which involves the failure to provide necessary physical care (e.g. food or shelter), emotional neglect is often less visible and can be challenging to identify. It can have lasting effects on a child's emotional and psychological development, self-worth and relationships. Exposure to childhood emotional neglect is associated with poor developmental outcomes such as increased maladaptive behaviours and lower self-esteem as well as psychopathology in adulthood.[24] In a study assessing the prospective relationship between childhood emotional neglect and depressive symptoms in late adolescence in the United Kingdom, childhood emotional neglect was significantly associated with depressive symptoms in late adolescence, which can be reduced by strong peer social support in mid-adolescence, even after accounting for emotional neglect.[24] The same study also found that the buffering impact of peer social support on depressive symptoms was consistent, regardless of a child's history of emotional neglect.[24]

Community violence was the second most common ACE subtype in this study. Several types of community violence exposure have been described in the literature, including witnessing, victimisation and hearsay, with most research focusing on the assessment of witnessing and victimisation.[25] A substantial body of research describes high rates of community violence exposure among adolescents and the numerous negative physical and mental health consequences

that may result from youth witnessing and being victimised by community violence.[26] Youths exposed to community violence have been reported to display increased aggression and conduct problems, depressive and anxious symptoms, problems with concentration, symptoms of post-traumatic stress disorder, academic difficulties and suicidal thoughts and behaviours.[26]

The prevalence of community violence reported in this study is comparable with that in another local study on ACEs among university students in northeast Malaysia (39.3%).[7] Variations in the prevalence of ACEs may be observed across countries, especially between developed and developing countries, due to societal and cultural differences. Social and cultural norms are highly influential over individual behaviour in a broad variety of contexts, including violence and its prevention.[27] The frequency, type, severity and timing of youth community violence exposure may be relevant to understanding the consequences and risk of such exposure.[26]

The inferential analysis in this study revealed significant relationships between ACEs and health status, personality traits, paternal smoking status, household income, parenting style and social support. Nevertheless, household income did not predict the occurrence of ACEs among the respondents. The study by Austin and colleagues[28] found that persons with disabilities (36.5%) reported higher ACE exposure than those without disabilities (19.6%); they were also more likely to report several ACE categories, particularly childhood sexual abuse. Furthermore, children with specific developmental disabilities, particularly those with autism spectrum disorder, are at increased risks for ACEs.[29] A study exploring ACEs among children with intellectual disabilities and borderline intellectual functioning in Dutch residential care revealed that 81.7% of children with intellectual disabilities and 92.3% of children with borderline intellectual functioning experienced at least one ACE.[30]

As for personality, the protective role of conscientious personality was also reported by Grusnick et al.[31] and Joannès et al.[32] According to Grusnick and colleagues,[31] all ACE scores were significantly and positively associated with neuroticism ($\beta$=0.10; 95% CI=0.07–0.13) and negatively associated with conscientiousness ($\beta$=–0.03; 95% CI=–0.05 to –0.01). The occurrence of ACEs was also reported to increase openness and decrease extraversion.[31]

Parental smoking and authoritarian parenting style were also found to predict the occurrence of ACEs. According to Joannès et al.,[32] apart from sibling order and conscientious personality trait, paternal smoking is a potential pathway towards ACEs. Conversely, authoritarian parenting, which is characterised by its rigid and punitive nature, is associated with an increased likelihood of a child experiencing ACEs. Authoritarian parents are often controlling and restrictive over their child and their choices, demand unquestioning obedience from their children, have stringent standards and discourage expressions of disagreement,[33] which are often seen as harsh and mean. Many studies have found a direct correlation between authoritarian parenting style and psychopathology.[34] According to Ghosh,[34] the negatively observed parenting strategy with little space for freedom, liberty, expressiveness and affection causes a child to develop a number of psychological, physical and social problems. However, parenting styles can be influenced by factors such as ethnicity and culture. Certain regions are known to have stricter parenting styles than others, which can definitely impact the choice of style used.

This study also revealed the role of social support in predicting ACEs. Research has indicated that social support can yield a buffering effect on psychological distress as well as prevent or decrease symptoms of anxiety, depression and post-traumatic stress.[35] Additionally, perceived social support has been shown to be a stronger buffer than received social support.[36] ACEs and low social support are also associated with increased risks of non-suicidal self-injury and suicidality in Chinese adolescents.[37] The available scientific evidence on the effects of family dynamics on children's development and resilience is consistent with the protective effect of high family support and the increased risk associated with inadequate family support.[38,39] Nevertheless, the findings of this study may have been influenced by the background characteristics of the majority of the respondents, who were of Malay ethnic group, female sex and a low household income family. Notably, household income did not predict ACEs in this study. Previous studies have reported an inverse relationship between household income and ACEs.[40] There is a possibility that the relationship between household income and ACEs is indirectly influenced or mediated

by other factors such as parental stress, which can consequently lead to parental mental health problems, substance abuse or family conflict.

*Strengths and limitations*

The adequate sample size and utilisation of stratified proportionate probability sampling ensured the representativeness of the recruited sample, thus reinforcing the reliability of the research findings. The use of a validated and reliable questionnaire ensured measurement accuracy, reliability of the findings over time and across different conditions and data validity. It also facilitated comparability with previous studies, reduced potential biases and confounding factors and enhanced the overall credibility of the research, hence contributing to the advancement of knowledge.

However, this study is without limitations. The temporality or causal links between the predictors and the outcome cannot be established from the cross-sectional nature of the study. There is also potential recall bias, as the respondents had to retrospectively recall any history of ACEs, leading to underreporting and false reporting. Furthermore, the parenting style was measured from either of the parents rather than from both separately, which may have also resulted in false reporting. The study is also limited in its cross-cultural generalisability within the multi-ethnic population in Malaysia, highlighting the need for future research to include more ethnically diverse samples.

## Conclusion

The findings of this study indicate that a large proportion of undergraduate students have experienced ACEs, which are predicted by the presence of health problems or disabilities, conscientiousness and openness personality traits, paternal smoking, authoritarian parenting style and high social support. Targeted awareness campaigns should focus on educating the general public about how ACEs negatively affect mental health, identifying key contributing factors and highlighting populations most vulnerable to these experiences.

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## Declaration of AI and AI-Assisted Technologies

The authors declare that no artificial intelligence (AI) or AI-assisted technologies were used in the writing, data analysis, or preparation of this manuscript.

## Ethical approval

This study was approved by the Ethics Committee for Research Involving Human Subject Universiti Putra Malaysia (ref. JKEUPM-2023-182), and individual written as well as verbal informed consent was obtained from the respondents prior to data collection.

## Conflicts of interest

The author declares no conflicts of interest relevant to this article.

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Nil.

## Data sharing statement

The datasets generated and analyzed during the current study are not publicly available due to participant confidentiality and ethical restrictions imposed by the ethics committee but are available from the corresponding author upon reasonable request.

**How does this paper make a difference in general practice?**

- This study addresses a highly preventable public health issue.
- Adverse childhood experiences (ACEs) are predicted by the presence of health problems/disabilities, openness and conscientiousness personalities, paternal smoking behaviour, authoritarian parenting style and social support received from family members, with health problems or disabilities being the strongest predictor.
- The nature of the relationship between ACEs and health problems or disabilities may be bidirectional and multifaceted.
- Leveraging the best available evidence is crucial to inform the development of effective strategies for preventing and mitigating ACEs, particularly among disproportionately affected populations.

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