ORIGINAL ARTICLE

The Relationship Between Adverse Childhood Experiences (ACEs) and Common Mental Health Problems Among Young Adults in a Public University in Malaysia

Mardhiyah Rusdi, Halimatus Sakdiah Minhat

Department of Community Health, Faculty of Medicine and Health Science, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia

ABSTRACT

Introduction: Adverse childhood experiences (ACEs) are an increasing public health concern that potentially has lasting adverse effects on health and well-being. This study aimed to determine the prevalence of ACEs according to the different subtypes, as well as the relationship between ACEs and common mental health problems, which are depression, anxiety, and stress. **Materials and methods:** A total of 372 eligible respondents from 12 consented faculties and one school in Universiti Putra Malaysia, Serdang campus, participated in this study. ACEs were measured using the WHO ACE International Questionnaire (ACE-IQ), which was modified for this study, and mental health problems were measured using the DASS-21. **Result:** Emotional neglect (46.2%) was found to be the most common ACEs subtype, with more than 3/4th of the respondents reporting an ACEs score of less than four (80.4%). The majority had normal scores for stress (91.9%), anxiety (65.9%) and depression (78%), with 1.3% (n=5) had severe depression, 1.6% (n=6) had extremely severe anxiety, 5.9% (n=22) had severe anxiety and 2.2% (n=8) had a moderate level of stress. All three common mental health problems were significantly associated with ACEs, with those who experienced ACEs score of four or more having 2.823 (95% CI:), 3.173 (95% CI:), and 3.594 (95% CI:) odds of developing depression, anxiety, and stress respectively. **Conclusion:** Despite the strong link between ACEs and common mental health problems, early screening and intervention may reduce the likelihood of negative impacts. Clinicians are integral in identifying childhood adversities and offering supportive measures to minimize adverse effects.
Malaysian Journal of Medicine and Health Sciences (2025) 21(6):1-8. doi:10.47836/mjmhs.v21.i6.1405

Keywords: Adverse childhood experience (ACEs), Mental health problems, Young adults, Emotional neglect, DASS-21

Corresponding Author:
Halimatus Sakdiah Minhat, PhD
Email: halimatus@upm.edu.my
Tel: +60123438175

INTRODUCTION

Adverse childhood experiences (ACEs) are common and highly prevalent in the community worldwide. It is described as a potentially traumatic event that occurs during childhood (0-17 years old) and can have a negative impact on health and well-being across an individual lifetime (1,2). ACEs range from individuals experiencing or witnessing violence or abuse, neglect in physical and emotional needs, having family members with mental illness or attempt suicide, and also growing up in a household environment that undermines the sense of safety, stability, and secure attachment, such as growing up in an unstable parental relationship, parental divorce, parents or family members with mental illness, substance abuse or incarceration.

There has been an increasing prevalence of one or more ACEs among adults aged 18 years and above, from 52.1% to 60.2%, with a twofold increment reported for the prevalence of four or more types of ACEs, from 6.2 % to 15.16%, in the United States since 1998 until 2019 (3). Higher prevalence has been reported among adult populations aged 18 years and older in China and Singapore, with lifetime ACEs prevalence of 66.2% and 63.9%, respectively (4,5). Nevertheless, the prevalence of ACEs is different across countries as it is influenced by sociodemographic factors of a country (6,7).

In Malaysia, Choo et al., in 2011 had done a cross-sectional study on victimization experiences among

1,870 students from 20 secondary schools in Selangor, found that 44.6% had at least one type of victimization with the most common type was emotional abuse (44.5%), followed by physical abuse (33.9%), neglect (12%) and sexual abuse (9.6%) (8). Another study done in 2020 among students in a private university in Kuala Lumpur found that 68.6% of students had experienced at least one type of childhood abuse, with the most common type being emotional abuse (43.8%), followed by physical abuse (15.7%), neglect (6.6%) and sexual abuse (2.5%) (9). A recent study done among the elderly using WHO ACE-IQ found that 69.1% of the elderly had at least one ACEs, and the most common ACEs subtypes were parental separation (24.4%) and physical neglect (24%), followed by community violence (20.4%), physical abuse (13.1%), emotional abuse (10.9%), experiencing household member treated violently (6.8%), being bullied (5.9%), collective violence (4.6%), sexual abuse (2.1%), living with alcohol or drug abuser in the house (1.2%), and living with someone chronically depressed, mentally ill or suicidal (0.8%) (10). However, fewer studies on ACEs look into all categories of ACEs, particularly among young adults; many studies only focus on abuse and neglect, while none of the studies include household dysfunction.

ACEs can negatively impact individual health substantially, mental health status, and life opportunities of young adults, particularly university students. A prospective birth cohort study on ACEs and multiple mental health outcomes through adulthood done in the U.K. found a dose-response association between prospectively and retrospectively reported ACEs and all studied mental health-related outcomes, in which the risk of clinically significant psychological distress was up to 2.14 times higher among those with two or more ACEs, and the risk of seeing a mental health specialist up to 2.85 times higher, compared to those with no ACEs prospectively (11). A study done in Singapore found that the presence of any ACEs was significantly associated with an increased likelihood of having mood disorders (OR=3.7, 95 % CI: 2.3–6.0), anxiety disorder (OR=3.9, 95 % CI: 2.3–6.8) and alcohol use (OR=1.7, 95 % CI: 1.1–3.0) disorders (5).

The impact of ACEs on mental health become more concerning among students in the university worldwide. A study done on the prevalence of depression among pharmacy students in Malaysia found a statistically significant association between depression and students with adverse events in life such as separated parents, a family history of mental illness, and having a history of recent loss of someone close ($p<0.05$) (12). Similar to a study done among students in a private university in Kuala Lumpur found that neglect and abuse statistically significantly correlate with depression, anxiety, and stress levels ($p<0.001$) (9).

Furthermore, based on a systematic review and meta-analysis of life course health consequences of ACEs and their associated annual cost found that the yearly total cost attributed to a person who had two or more ACEs was estimated to be US$748billion (RM3,309.9billion) in North America and findings also suggest that 10% reduction in ACEs prevalence could save US$3million (about RM13.275million) disability-adjusted life-years (DALYs) (13). Therefore, research in a particular country such as Malaysia is needed to understand the prevalence, risk factors, and impact of adverse childhood experiences (ACEs) in order to address this issue to the stakeholders and develop effective strategies to prevent ACEs or to mitigate the negative consequences of ACEs.

MATERIALS AND METHODS

A cross-sectional study was conducted among undergraduate students of Universiti Putra Malaysia (UPM), Serdang campus. Data was collected between April and May 2023, involving Malaysian undergraduate students in UPM Serdang aged 18 and above. Stratified probability sampling was employed to recruit eligible respondents from 12 consented faculties and one school in Universiti Putra Malaysia, Serdang campus. Only 372 respondents responded and completed the questionnaire from a total of 453 distributed based on the calculated sample size, after adding 20% of the non-response rate. Each faculty and school served as the stratum, and the number of samples in each stratum was determined proportionally based on the estimated sampling populations within each stratum. Then, the samples were selected through simple random sampling using computer-generated numbers in Microsoft Excel based on the calculated proportion of sample size, using the RAND formula.

The eligible samples were approached via email to obtain informed consent and to distribute the Google form's link containing a validated self-administrated questionnaire, which includes ID information, adverse childhood experiences, and mental health problems. The selected sample who did not respond to the email, refused to participate, or did not complete the questionnaire were excluded from this study. Table I shows the proportion of the sample size and the final number of respondents based on a list of consented faculties and schools in UPM, Serdang.

Table I: Proportion of Sample Size and Final Number of Respondents

No.	List of Consented Faculties and School in UPM, Serdang	Estimated Sampling Populations	Proportion of sample size	Final Number of Respondents
1	Faculty of Agricultural and Forestry Sciences	960	38	38
2	Faculty of Biotechnology and Biomolecular Sciences	783	31	31

continue

Table I: Proportion of Sample Size and Final Number of Respondents (cont.)

No.	List of Consented Faculties and School in UPM, Serdang	Estimated Sampling Populations	Proportion of sample size	Final Number of Respondents
3	Faculty of Human Ecology	910	36	10
4	Faculty of Educational Studies	1256	49	49
5	Faculty of Engineering	822	32	18
6	Faculty of Modern Languages and Communication	822	32	32
7	Faculty of Food Science and Technology	822	32	32
8	Faculty of Forestry and Environment	829	33	25
9	Faculty of Medicine and Health Sciences	1393	55	55
10	Faculty of Design and Architecture	467	18	6
11	Faculty of Computer Science and Information Technology	803	32	23
12	Faculty of Science	822	32	27
13	School of Business	822	32	26
Total		**11, 511**	**453**	**372**

Study Instruments

This study utilized a self-administered questionnaire in English version. ACEs were measured using a modified questionnaire which was adapted from the WHO ACE International Questionnaire (ACE-IQ), a well-established and comprehensive tool to assess 13 types of ACEs, including neglect, abuse, household dysfunction (including live with alcohol/substance misuse, mentally ill/suicidal or incarcerated household member, witness household member treated violently and parental separation/divorce), and community and collective violence, which has been utilized globally. Responses to the questions were "yes," "no," or "unsure," with scores assigned only to "yes" responses, except for emotional neglect, which receives a score for "no" response. The total score, ranging from 0 to 13, was then categorized into two groups: ACEs score less than four, and ACEs score four or more (2,14). The cut-off four ACEs score was chosen because previous studies showed a consistent association with adverse health outcomes (15). Meanwhile, DASS-21 was used to measure mental health problems (comprised of 21 questions), a well-known self-report instrument for mental health screening in Malaysia. It does not require a particular skill to administer it, and permission is not needed to use it as it is a public domain. There are 21 questions in DASS-21, which consist of 7 questions in each subset of depression, anxiety, and stress, which intended to assess the negative emotional states of stress, anxiety, and depression symptoms that happened over the past week, through the Likert scale of "0 for did not apply to me at all" to "3 for applied to me very much, or most of the time". The Likert scale in the DASS-21 has been shown to have high internal consistency and can meet the needs of the researchers or anyone who wishes to assess current condition or condition that changes over time. The total score of each subscale needs to be multiplied by two to fit the recommended cut-off scores for conventional severity labels, which are normal, mild, moderate, severe, and extremely severe (16).

Data Analysis

Data analysis was conducted using SPSS software version 27. Initially, the data was checked for duplications, missing values, errors, and outliers, which were subsequently cleaned. Next, continuous data was assessed for normal distribution through visual inspection and statistical methods, with a significance level set at 0.05. Descriptive analysis was performed, including frequency and percentage for categorical data and measures of central tendency and dispersion for continuous data. A simple logistic regression analysis was carried out to determine the association between ACEs score and mental health problems.

ETHICAL CLEARANCE

This study was approved by the Ethics Committee for Research Involving Human Subjects University Putra Malaysia (JKEUPM-2023-182), and individual informed consent was obtained from the respondents before the data collection.

RESULT

Prevalence of Adverse Childhood Experiences (ACEs)

Table II shows the prevalence of ACEs according to the different subtypes. Emotional neglect (46.2%), community violence (38.7%), and household dysfunction (37.6%) were ACEs subtypes with the highest percentage reported. More than 3/4th of the respondents obtained an ACEs score of less than 4 (80.4%).

Table II: Prevalence of ACEs by subtype and ACEs score classification (n=372).

Variables	n	%
ACEs Subtypes		
Emotional Neglect	172	46.2
Physical Neglect	19	5.1
Household Dysfunction:	140	37.6
a. live with alcoholic/substance misused household member	6	1.6
b. live with incarcerated household member	4	1.1
c. live with mentally ill/suicidal household member	22	5.9
d. witness household members treated violently	94	25.3
e. Parental separation/divorce	56	15.1

continue

Table II: Prevalence of ACEs by subtype and ACEs score classification (n=372). (cont.)

Variables	n	%
Emotional Abuse	73	19.6
Physical Abuse	30	8.1
Sexual Abuse	33	8.9
Bullying	76	20.4
Community Violence	144	38.7
Collective Violence	21	5.6
ACEs Score		
< 4	299	80.4
≥ 4	73	19.6

Prevalence of Mental Health Problems

The assessment of mental health problems using the DASS-21 instrument shows that the majority of the respondents had normal scores for stress (91.9%), anxiety (65.9%), and depression (78%). However, 5.9% (n=22) reported mild stress, and 2.2% (n=8) for moderate stress. For anxiety, 1.6% (n=6) of respondents reported extremely severe level of anxiety and 5.9% (n=22) reported severe level of anxiety, with other respondents reported mild (9.9%) and moderate (16.7%) level of anxiety. For depression, 11% (n=41) reported mild depression, while 9.7% reported moderate depression, and 1.3% reported severe depression. Table III shows the prevalence of mental health problems among undergraduate students in UPM.

Table III: Prevalence of mental health problems (n=372)

Variables	n	%
Stress		
Normal	342	91.9
Mild	22	5.9
Moderate	8	2.2
Anxiety		
Normal	245	65.9
Mild	37	9.9
Moderate	62	16.7
Severe	22	5.9
Extremely Severe	6	1.6
Depression		
Normal	290	78.0
Mild	41	11.0
Moderate	36	9.7
Severe	5	1.3

Association between ACEs score and mental health problems

Table IV shows a logistic regression analysis of adverse childhood experiences (ACEs) and mental health problems to identify the association between respondent's adverse childhood experiences (ACEs) score and mental health problems among undergraduate students in UPM. The findings revealed a significant association between all three mental health problems with ACEs scores, in which respondent with ACEs score four or more had 2.823 times higher odds of depression (OR=2.823, 95% CI:1.619, 6.221, p<0.001), 3.173 times higher odds of anxiety (OR=3.173, 95% CI:1.876, 5.369, p<0.001), and 3.594 times higher odds of stress (OR=3.594, 95% CI:1.657, 7.794, p<0.001) compared to respondent with ACEs score less than four.

Table IV: The association between adverse childhood experiences (ACEs) and mental health problems (n=372)

Variable		Coefficient	Standard Error (SE)	Odd Ratio (OR)	95% CI	
					Lower bound	Upper bound
Depression						
ACEs						
	<4	Ref.				
	≥4	1.038	0.284	2.823*	1.619	4.614
Constant		-1.512	0.150	0.220		
Anxiety						
ACEs						
	<4	Ref.				
	≥4	1.155	0.268	3.173*	1.876	5.369
Constant		-0.907	0.128	0.404		
Stress						
ACEs						
	<4	Ref.				
	≥4	1.279	0.395	3.594*	1.657	7.794
Constant		-2.809	0.250	0.060		

DISCUSSION

Prevalence of Adverse Childhood Experiences (ACEs)

The prevalence of at least one ACEs was 76.6%, while four or more ACEs were 19.6%. This finding is consistent with a study among university students in Vietnam, where the prevalence of at least one ACEs was 79.9% and four or more ACEs was 22.1% (17) and finding of a study among college students in the U.S. where the prevalence of 4 or more ACEs was 22.8% (18).

The findings were consistent with other studies showing that ACEs score data skewed to the right, with the highest score being zero and tapering at the highest score of 13. In addition, the finding from this study is also consistent with other studies that show a high prevalence of ACEs among university students compared to the general population; about 62% of adults had experienced at least one type of ACE before the age of 18 (7) may be due to increased awareness of mental health among university students (19) that leads to students' willingness to report ACEs, especially when they feel supported or when reporting mechanisms ensure confidentiality (20).

This study found emotional neglect was the highest percentage of ACEs subtype, which is 46.2%, followed by community violence (38.7%), household dysfunctions (37.6%), bullying (20.4%), emotional abuse (19.6%), and other adverse childhood experiences (5.1-8.9%). Compared to another study of ACEs among university students in Northeast Malaysia, it was found that community violence was the most prevalent at 39.3%,

which is relatively the same percentage as this study, followed by emotional abuse at 30.2% which is higher than this study, then followed by emotional neglect at 29.1% which lower than this study, and physical abuse at 28.7% which higher than this study, while other adverse childhood experiences were reported at 2.6-9.1% (21).

While compared to previous studies in Western contexts, emotional and physical abuse often ranks the highest (22–24), different from our finding that emotional neglect is the most prevalent ACE subtype among Malaysian university students, underscores the unique cultural and familial dynamics in different countries influence the type and reporting of childhood adversities (25). The type of childhood adversity varies between countries and co-occurs in various forms concerning specific events, socioeconomic background, parental education and employment, cultural and societal norms (7,17,21,26). Therefore, this finding highlights that emotional neglect is a critical area of concern across different cultural contexts, warranting targeted interventions to reduce the adverse impact of ACEs, particularly among university students.

The high prevalence of at least one ACEs score with a high percentage of emotional neglect among university students may have several implications on their academic, social, and psychological well-being. Previous studies have shown that students with higher ACE scores tend to report more academic difficulties and family problems, which in turn significantly predict higher academic barriers (27,28). This suggests that addressing ACEs through university-based mental health programs could not only improve mental health outcomes but also enhance academic success and overall well-being. Thus, screening for ACEs during the entrance of university could be beneficial in identifying students at risk in order to provide them with strategic intervention programs, as those with ACEs tend to report more family difficulties and health problems, which in turn significantly predict higher academic barriers (17,27,28).

Association between ACEs and mental health problems

Adverse childhood experiences (ACEs) have been reported to have profound, lasting effects on physical and mental health. According to Bomysoad and Francis (25), the effects of ACEs measured earlier in adolescence are less understood, with some research findings suggesting that ACEs show a graded effect on behavioral problems during adolescence and other mental health outcomes in adulthood.

Analysis of the association between respondents' ACEs scores and mental health problems found that there was a significant association ($p<0.001$) between adverse childhood experiences (ACEs) scores and mental health problems among undergraduate students in UPM. These findings are consistent with a study among university students in Vietnam, where the study found a strong association between the number of ACEs and mental health problems such as depressive and anxiety symptoms, in which students with four or more ACEs had significantly poorer mental health than those who reported zero ACEs score (17). Similarly, data from the 2016-2017 National Survey of Children's Health aged 12 to 17 years old, a nationally representative study of health outcomes and social contexts of U.S households with noninstitutionalized children, reported that the odds of having a current mental health condition increased with increasing levels of ACE exposure (29). Consistent with studies in Vietnam and the US, our findings reveal a significant association between ACEs and mental health problems, specifically depression, anxiety, and stress among Malaysian university students.

The high prevalence of emotional neglect as the most common ACE subtype suggests that this particular form of adversity plays a crucial role in shaping the mental health outcomes of this population; thus, the intervention strategies need to be tailored to the target population, align with Tran et al. (15), which emphasized the importance of context-specific mental health interventions. In addition to emotional neglect, other prevalent ACE subtypes, such as community violence and household dysfunction, further illustrate the multifaceted nature of childhood adversities in Malaysia. These subtypes reflect broader societal issues that contribute to the overall burden of ACEs. The high rates of community violence and household dysfunction emphasize the need for comprehensive community-based interventions to address the root causes of these adversities.

Furthermore, the current study found that more than three-quarters of the respondents had an ACE score of less than four, yet those with four or more ACEs had significantly higher odds of developing depression, anxiety, and stress. This dose-response relationship is consistent with global research showing that the cumulative effect of multiple ACEs exacerbates mental health issues, suicidal ideation, and low physical health-related quality of life (11,17,30). Specifically, respondents with an ACE score of four or more had approximately three times higher odds of experiencing depression, anxiety, and stress, underscoring the severe impact of multiple adversities on mental health. The findings of this study provide crucial insights for policymakers and educators in Malaysia. Integrating mental health screening and support services within educational institutions could play a pivotal role in identifying and supporting students with a history of ACEs. Tailored intervention programs that address the specific needs of these students, particularly those related to emotional neglect, are essential for reducing the long-term negative impacts of ACEs.

Besides that, the findings of this study contribute to the

growing body of evidence highlighting the significant association between ACEs and mental health problems aligns with existing literature, reinforcing the toxic stress hypothesis, where prolonged activation of the stress response system due to ACEs can lead to the changes in the brain development and affect how the body responds to it (30-32). It underscores the importance of early intervention and prevention strategies, as well as the need for mental health support programs or services tailored to individuals with a history of ACEs, mainly undergraduate students, as they are at higher risk of mental health problems which may contribute by many other factors such as difficult experiences, challenges, and stress during their transitional period of life (12,33).

Meanwhile, in another study which was also a nationwide survey in the USA, the positive relationship between adolescents' ACEs and mental disorders ($=0.13$, $p<0.05$) was found to be partially mediated by family functioning ($\beta=0.10$, $p<0.001$) and civic engagement ($\beta=0.01$, $p<0.05$), with low household income ($\beta=-0.24$, $p<0.001$) and low parent education ($\beta=-0.05$, $p<0.05$) significantly increased adolescents' likelihood of having ACEs (34). Additionally, avoidance coping, detachment, and psychoticism were also found to mediate the relationship between ACEs and mental disorders, particularly anxiety (25). Previous studies draw some insight into the factors that can influence the relationship between ACEs and mental health problems, while the current study did not specifically investigate it; thus, future research could explore these factors in more detail to further understand its dynamics.

In addition, the results should be interpreted within the context of the study's limitations. The cross-sectional study design may lead to temporal ambiguity and limited ability to establish causality due to the inability to determine whether exposure preceded the outcome since the data on exposure and outcome are collected simultaneously.

CONCLUSION

The majority of the young adults who participated in this study experienced less than four subtypes of ACEs, with the emotional neglect subtype being the most prevalent, followed by community violence and household dysfunction. Nevertheless, those who experienced four or more ACEs subtypes were at greater risk of developing depression, anxiety, and stress, with the strongest relationship observed between ACEs (four or more) and stress. Given the negative impacts of ACEs on mental health, early screening and intervention programs in universities are critical, particularly the high prevalence of emotional neglect, which suggests that intervention strategies need to be culturally tailored. Policymakers should consider integrating mental health support services within educational institutions to address these issues proactively.

ACKNOWLEDGEMENTS

The author greatly appreciates the cooperation and contributions of everyone who participates and contributes their effort to this study, especially the undergraduate student's University of Putra Malaysia to this study.

REFERENCE

1. CDC. About the CDC-Kaiser ACE Study [Internet]. Centers for Disease Control and Prevention. 2021. Available from: https://www.cdc.gov/violenceprevention/aces/about.html
2. Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, et al. Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE)Study. Am J Prev Med. 1998;14(4):245–58. doi: 10.1016/s0749-3797(98)00017-8.
3. Merrick MT, Ford DC, Ports KA, Guinn AS, Chen J, Klevens J, et al. Vital Signs: Estimated Proportion of Adult Health Problems Attributable to Adverse Childhood Experiences and Implications for Prevention — 25 States, 2015–2017. Centers Dis Control Prev. 2019;68(44):2015–7.
4. Chang X, Jiang X, Mkandarwire T, Shen M. Associations between adverse childhood experiences and health outcomes in adults aged 18–59 years. PLoS One. 2019;14(2):1–11. doi: 10.1371/journal.pone.0211850.
5. Subramaniam M, Abdin E, Seow E, Vaingankar JA, Shafie S, Shahwan S, et al. Prevalence, socio-demographic correlates and associations of adverse childhood experiences with mental illnesses: Results from the Singapore Mental Health Study. Child Abus Negl [Internet]. 2020;103(February):104447. Available from: https://doi.org/10.1016/j.chiabu.2020.104447
6. Boullier M, Blair M. Adverse childhood experiences. Paediatr Child Heal (United Kingdom) [Internet]. 2018;28(3):132–7. Available from: https://doi.org/10.1016/j.paed.2017.12.008
7. CDC. Adverse childhood experiences (ACEs) [Internet]. Centers for Disease Control and Prevention. 2021. Available from: https://www.cdc.gov/violenceprevention/aces/index.html
8. Choo WY, Dunne MP, Marret MJ, Fleming M, Wong YL. Victimization experiences of adolescents in Malaysia. J Adolesc Heal [Internet]. 2011;49(6):627–34. Available from: http://dx.doi.org/10.1016/j.jadohealth.2011.04.020
9. Azaf NSN, Vizabaskaran K, Karisnan K, Jamaludin ANSJ. Impact of Multi-Type Childhood Abuse on Psychological Development and Coping Strategies among Perdana University Students. Malaysian J Med Heal Sci. 2022;18(1):187–94.
10. Asyraf M, Dunne MP, Hairi NN, Hairi FM, Radzali

N, Yuen CW. The association between elder abuse and childhood adversity: A study of older adults in Malaysia. PLoS One [Internet]. 2021;16(7 July):1–14. Available from: http://dx.doi.org/10.1371/journal.pone.0254717
11. Gondek D, Patalay P, Lacey RE. Adverse childhood experiences and multiple mental health outcomes through adulthood: A prospective birth cohort study. SSM - Ment Heal [Internet]. 2021;1(August):100013. Available from: https://doi.org/10.1016/j.ssmmh.2021.100013
12. Yusof NSM, Zainal ZA, Huri HZ, Jacob SA, Alwi MNM, Hassan Y, et al. Prevalence of depression among undergraduate pharmacy students in Malaysia. Int J Pharm Res. 2020;12(3):2033–42. DOI: 10.31838/ijpr/2020.12.03.282
13. Bellis MA, Hughes K, Ford K, Ramos Rodriguez G, Sethi D, Passmore J. Life course health consequences and associated annual costs of adverse childhood experiences across Europe and North America: a systematic review and meta-analysis. Lancet Public Heal [Internet]. 2019;4(10):e517–28. Available from: http://dx.doi.org/10.1016/S2468-2667(19)30145-8
14. WHO. Adverse childhood experiences international questionnaire (ACE-IQ). Retrieved online World Heal World Heal Organ [Internet]. 2012;2:14. Available from: http://www.who.int/violence_injury_prevention/violence/activities/adverse_childhood_experiences/guidance_for_analysing.pdf
15. Watt T, Kim S, Ceballos N, Norton C. People who need people: the relationship between adverse childhood experiences and mental health among college students. J Am Coll Heal [Internet]. 2022;70(4):1265–73. Available from: https://doi.org/10.1080/07448481.2020.1791882
16. Lovibond SH, Lovibond PF. Manual for the Depression Anxiety & Stress Scales (2nd Ed.). Sydney Psychol Found. 1995;1–2.
17. Tran QA, Dunne MP, Vo T Van, Luu NH. Adverse childhood experiences and the health of university students in eight provinces of Vietnam. Asia-Pacific J Public Heal. 2015;27:26S-32S. doi: 10.1177/1010539515589812.
18. Sieben A, Renner LM, Lust K, Vang W, Nguyen RHN. Adverse Childhood Experiences Among Asian/Pacific Islander Sexual Minority College Students. J Fam Violence. 2020;35(3):297–303. doi: 10.1007/s10896-019-00095-7.
19. Kotera Y, Ting SH, Neary S. Mental health of Malaysian university students: UK comparison, and relationship between negative mental health attitudes, self-compassion, and resilience. High Educ. 2021;81(2):403–19. DOI: 10.1007/s10734-020-00547-w
20. Paulhus D. Socially Desirable Responding: The Evolution of a Construct. Role Constr Psychol Educ Meas. 2021;(May):61–84.
21. Majid M, Rahman AA, Taib F. Adverse Childhood Experiences and Health Risk Behaviours among the Undergraduate Health Campus Students. Malaysian J Med Sci. 2023;30(1):152–61. doi: 10.21315/mjms2023.30.1.13.
22. Lee KA, Priestley SR, Hylton KK. Mental health and behavioral outcomes among Jamaican women: The role of childhood abuse & witnessing parental violence. Child Youth Serv Rev [Internet]. 2022;140(May):106588. Available from: https://doi.org/10.1016/j.childyouth.2022.106588
23. Risso PA, Jural LA, Santos IC, Cunha AJLA. Prevalence and associated factors of adverse childhood experiences (ACE) in a sample of Brazilian university students. Child Abus Negl. 2024;150(October 2022). doi: 10.1016/j.chiabu.2023.106030.
24. Afifi TO, Fortier J, Sareen J, Taillieu T. Associations of Harsh Physical Punishment and Child Maltreatment in Childhood With Antisocial Behaviors in Adulthood. JAMA Netw open. 2019;2(1):e187374. doi: 10.1001/jamanetworkopen.2018.7374.
25. Craig F, Servidio R, Calomino ML, Candreva F, Nardi L, Palermo A, et al. Adverse Childhood Experiences and Mental Health among Students Seeking Psychological Counseling Services. Int J Environ Res Public Health. 2023;20(10). doi: 10.3390/ijerph20105906.
26. Sieben A, Lust K, Crose A, Renner LM, Nguyen RHN. Race and sex differences in adverse childhood experiences among Asian/Pacific Islander college students. J Am Coll Heal. 2021;69(4):353–60. doi: 10.1080/07448481.2019.1677671.
27. Hinojosa R, Nguyen J, Sellers K, Elassar H. Barriers to college success among students that experienced adverse childhood events. J Am Coll Heal [Internet]. 2019;67(6):531–40. Available from: https://doi.org/10.1080/07448481.2018.1498851
28. Karatekin C. Adverse Childhood Experiences (ACEs), Stress and Mental Health in College Students. Stress Heal. 2018;34(1):36–45. doi: 10.1002/smi.2761.
29. Bomysoad RN, Francis LA. Adverse Childhood Experiences and Mental Health Conditions Among Adolescents. J Adolesc Heal [Internet]. 2020;67(6):868–70. Available from: https://doi.org/10.1016/j.jadohealth.2020.04.013
30. Nurius PS, Green S, Logan-Greene P, Borja S. Life course pathways of adverse childhood experiences toward adult psychological well-being: A stress process analysis. Child Abuse Negl. 2015 Jul 1;45:143–53. doi: 10.1016/j.chiabu.2015.03.008.
31. Nelson CA, Scott RD, Bhutta ZA, Harris NB, Danese A, Samara M. Adversity in childhood is linked to mental and physical health throughout life. BMJ. 2020;371:1–9. doi: 10.1136/bmj.m3048.
32. Shonkoff JP, Garner AS, Siegel BS, Dobbins MI, Earls MF, McGuinn L, et al. The lifelong effects of early

childhood adversity and toxic stress. Pediatrics. 2012 Jan;129(1). doi: 10.1542/peds.2011-2663.

33. Amir Hamzah NS, Nik Farid ND, Yahya A, Chin C, Su TT, Rampal SRL, et al. The Prevalence and Associated Factors of Depression, Anxiety and Stress of First Year Undergraduate Students in a Public Higher Learning Institution in Malaysia. J Child Fam Stud. 2019;28(12):3545–57. doi: 10.21315/mjms2023.30.1.13.
34. Lu W, Xiao Y. Adverse Childhood Experiences and Adolescent Mental Disorders: Protective Mechanisms of Family Functioning, Social Capital, and Civic Engagement. Heal Behav Res. 2019;2(1). DOI: 10.4148/2572-1836.1035