ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES,
SCHOOL OF MEDICINE, DEPARTMENT OF PSYCHIATRY

ADVERSE CHILDHOOD EXPERIENCES AND THEIR ASSOCIATION WITH COMMON MENTAL DISORDERS AMONG ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES UNDERGRADUATE STUDENTS

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Adverse Childhood Experiences and Their Association With Common Mental Disorders Among Addis Ababa University College of Health Sciences Undergraduate Students

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Acronyms/ Abbreviations

AAU: Addis Ababa University

ACE: Adverse Childhood Experiences

CDC: Centers for Disease Control

CHS: College of Health Sciences

CMD: Common Mental Disorders

CTQ: Childhood Trauma Questionnaire

GAD: Generalized Anxiety Disorder

LIC: Low Income Countries

MIC: Middle Income Countries

PHQ: Patient Health Questionnaire

WHO-IQ: World Health Organization International Questionnaire

List of Tables

Table 1: Socio-Demographic Characteristics of the Participants..... 34

Table 2: Descriptive statistics of cofounding, dependent and independent variables 35

Table 3: Comparing the depression and anxiety severity among each ACE type with Mann-Whitney U Test 38

Table 4: Binary logistic Regression Analysis between each independent variables and Depression and Anxiety 41

Table 5: Multivariable Model of Factors associated with depression and anxiety 43

Table 6: Budget 51

List of Figures

Fig.1: Conceptual Framework ……....23

Fig.2: Sampling Method …… .27

Fig 3: Comparison between the prevalence of ACEs in the frequency and binary Scoring Methods of ACEIQ ……....36

Contents

Acknowledgment 4
Acronyms/ Abbreviations 5
List of Tables 6
List of Figures 7
Abstract 10
1. Introduction 11
1.1 Background 11
1.1. Statement of the Problem 13
1.2. Rationale of the Study 13
1.3. Research Questions 14
2. Literature Review 14
2.1. The ACE Study: Pilot Study on ACEs 14
2.2. Prevalence of ACEs 17
2.2.1 High- and Middle-Income Countries 17
2.2.2. Low Income Countries 18
2.2.3. Prevalence of ACEs in Children and Adolescents 19
2.3. Impacts of ACEs 20
2.3.1. CMDs in College Students 22
2.4. Prevention of ACEs 22
3. Conceptual Framework 25
4. Objectives 26
4.1. Specific Objectives 26
5. Methodology 26
5.1. Study Design 26
5.2. Study Setting and Study Population 26
5.3. Study Period 27
5.4. Inclusion Criteria 27
5.5. Exclusion Criteria 27
5.6. Sample Size Determination 28
5.7. Sampling Method 28
5.8. Measures and Data Collection 29

5.9. Data collection procedure 33
5.10. Data Processing and Analysis 33
6. Ethical Considerations 34
7. Results 35
8. Discussion 44
8.1. Limitations and Strengths 48
9. Conclusion 49
9.1. Recommendations 49
10. References 50
11. Annex 58
11.1. Annex I: Information Sheet and Consent Form 58
11.2. Annex II: Questionnaire 60

Abstract

Background: Adverse Childhood Experiences refer to various traumatic or challenging events and circumstances that can occur during childhood. These experiences can have long-lasting negative effects on an individual's physical, mental, and emotional well-being.

Objective: The aim of this study was to describe Adverse Childhood Experiences and their association with common mental disorders among College of Health Science Students at Addis Ababa University.

Methods and materials: A cross-sectional study was conducted employing a stratified random sampling with a sample of 345 undergraduate students. The data was collected through a self-administered questionnaire. Socio demographic, ACE-IQ, PHQ-9, GAD-7, and a brief assessment tool for substance use was used. Binary and multivariate logistic regressions were used to determine the association between ACEs, dependent and independent variables.

Result: In the total sample (N = 345), the participant's mean age was 22.2, with the majority being females (58%). 15.9% of the participants had depression symptoms (scored more than 10 in PHQ-9 score) and 14.2% had anxiety symptoms (scored more than 10 in GAD 7 score). Majority of the participants (80%) had at least one ACE and one fourth (25.2%) of the participants had experienced 4 or more ACEs. The most prevalent type of ACE was community violence (35.4%). One fifth (20%) of the participants had reported having experienced childhood sexual abuse. After controlling for confounding variables, those with 4 or more ACEs were 6.17 times (aOR 6.17; 2.51, 15.18) and 6.0 times (aOR 6.0; 2.25, 16.02) more likely to have depression and anxiety respectively.

Conclusion: There is a high prevalence of depression and anxiety among undergraduate college of health science students of Addis Ababa University. Adverse childhood experiences are also highly prevalent among the participants. There was a dose response relationship between ACEs and both anxiety and depression after controlling for confounding variables.

Recommendation: Identifying and preventing ACEs at an early stage could contribute to reducing the prevalence of depression and anxiety among college students. Effort to prevent ACEs should target not just individuals but also extend to households and communities.

Keywords: Adverse Childhood Experiences, Depression, Anxiety, ACE-IQ, CHS students

1. Introduction

1.1 Background

Adverse childhood experiences (ACEs) include various forms of physical, sexual and emotional abuse, neglect, dysfunctional family relationships, bullying, community and collective violence experienced under the age of 18 years (1,2). Some of the ways in which adverse childhood experiences are thought to cause negative health outcomes could be; childhood trauma leading to maladaptive coping mechanism like overeating, heavy smoking, alcohol and drug use which could lead to diseases like HTN, Diabetes, cardiac illness and cancer(3).

Chronic stress can have an effect, independent of maladaptive coping mechanisms, on inflammatory processes affecting the body's immune system, endocrine system and causing various physical illnesses and chronic maladaptation of psychological systems. There may be long term damage to the developing brain that contributes to both mental and physical illness (4,5,3). At the molecular level, the stress of ACE can lead to epigenetic modifications that result in "biological embedding of early life experiences". This could affect future health outcomes and also result in multigenerational dysregulation of stress response (6).

Early childhood trauma could also lead to disorganized attachment style which in turn could result in psychopathologies in young adulthood (7,8). All of these could be ways in which adverse childhood experiences result in problems with health in adults.

It is shown in various studies worldwide that adverse childhood experiences are highly associated with common mental disorders such as depression and anxiety (9). These impacts have been documented in sub-Saharan Africa where widespread exposure to childhood adversities arise from factors like poverty, community violence, HIV/AIDS, and orphan hood.(10–12).

The ACE study which was done by U.S. health maintenance organization Kaiser Permanente and the CDC has served as benchmark study for much subsequent research. The first article was published in 1998(1) and has produced more than 50

articles that explore the prevalence and consequences of ACEs. The original 7 ACEs included psychological, physical, and sexual abuse, as well as exposure in the home to substance abuse, mental illness and suicide, incarceration, or violence(1). These were expanded into 10 ACEs to include physical neglect, emotional neglect and losing a parent through divorce or death, forming a 10-item screening questionnaire(13). This questionnaire was expanded again in 2020 as the WHO-International Questionnaire (WHO-IQ), to include childhood adversity outside of the home: peer, community and collective violence (2).

The ACE study and many other subsequent studies have identified that adverse childhood experiences are associated with a variety of mental and physical risks and disorders as noted above. There is a graded response between ACEs and a number of health risk behaviors (obesity, substance abuse) and outcomes like depression, anxiety, suicidal attempts, COPD, liver diseases, coronary artery disease and autoimmune diseases (1,14–17).

In Ethiopia there is a lack of ACE research. The few existing studies have primarily used the 10-item ACE questionnaire. However, this study used the more comprehensive WHO-International Questionnaire, which is specifically designed for low- and middle-income countries (LMIC) like Ethiopia, where instances of collective and community violence are more prevalent.

Considering that 75% of lifelong mental disorders, such as depression and anxiety, commonly arise during early adulthood(18), it is justifiable to prioritize college students as a targeted group for this study. Moreover, the repercussions of mental health issues on this population can have significant economic and social implications, rendering it a matter of national importance. In addition, it was also more convenient to do the study among college students, as College of Health Science students at AAU were easier to access, Consequently, the primary objective of this study was to explore ACEs and their potential correlation with CMDs among undergraduate students at Addis Ababa University College of Health Sciences.

1.1. Statement of the Problem

There is strong evidence that ACEs increase the risk of developing various physical and mental health problems, including depression and anxiety disorders in adulthood (1,13,15,19). However, limited studies have been conducted in Ethiopia on ACEs, despite the fact that there has been community and collective violence in the country for many decades. Ethiopia remains a LIC and children growing up in low socioeconomic status environments has been associated with higher prevalence of ACEs (2,20,21). The few studies done in Ethiopia have used the 10-item ACE questionnaire, but the World Health Organization (WHO) recommends the use of the WHO-International Questionnaire, which covers a wider array of adverse experiences to which children may be exposed, including violence outside of the home (bullying, community violence and collective violence).

1.2. Rationale of the Study

This research aims to address the research gap in the country by describing ACEs and their association with common mental disorders among College of Health Sciences undergraduate students at Addis Ababa University. This study population is selected because one, it was more convenient and two, most mental health disorders and problems become evident in this age group and because studies show that college students have increased health demands (18,22). Additionally, this study aims to compare the findings with other international studies. This study will be the first to utilize the WHO-International Questionnaire in the country, providing an opportunity to collect more comprehensive data on ACEs.

The high prevalence of ACEs combined with the mounting evidence highlighting their substantial role in various mental disorders, implies that addressing ACEs could serve as a strategic focus for intervention to promote the prevention of these disorders.

1.3. Research Questions

1. What is the prevalence of ACEs among College of Health Science undergraduate students at Addis Ababa University?
2. What is the prevalence of CMDs among College of Health Science undergraduate students at Addis Ababa University?
3. What is the association, both adjusted and unadjusted, between ACEs and CMDs?

2. Literature Review

ACEs refer to stressful or potentially traumatic incidents that children encounter before reaching the age of 18. The term ACEs originated 1998 after the release of the Adverse Childhood Experiences study (ACE study) (1).

Adverse Childhood Experiences (ACE) include some of the most severe and commonly encountered stressors that children experience. These encompass various forms of abuse and adverse experiences. The 10 item ACE score includes: the experiences of abuse (physical, emotional and sexual), neglect (physical and emotional), living with a family member with mental illness or a family member who has been abusing a substance, a family member with criminal behavior, witnessing domestic violence against a parent, parental divorce, or parental death.

2.1. The ACE Study: Pilot Study on ACEs

The ACE study is a research investigation carried out by the U.S. health maintenance organization Kaiser Permanente and the CDC in San Diego. Participants were enrolled in the network of family practice and recruited to the study between 1995 and 1997 and remained in long-term follow up for health outcomes. The initial study conducted in 1998 was a significant epidemiological study that involved both retrospective and prospective analyses of over 17,000 individuals. It explored the impact of early life trauma within the first 18 years on various aspects, including adolescent and adult medical and psychiatric conditions, sexual behavior, healthcare expenses and life expectancy (1).

The study participants were middle-class Americans, all of whom had high quality health insurance. The demographic composition consisted of 80% white individuals, including Hispanic, 10% black and 10% Asian. Approximately 74% had received college education and average age was 57. The gender distribution was nearly equal. The core of the ACE study involved looking back about fifty years to compare a person's current health and overall wellness with negative experiences during their childhood (measured by the ACE score). The study then followed this group into the future to analyze how the ACE score correlated with future outcomes, including visits to the doctor, emergency room visits, hospitalizations, pharmacy expenses, and mortality(1,3).

The research revealed a significant and consistent correlation between the extent of exposure to childhood abuse or household dysfunction and various risk factors associated with leading causes of adult mortality. The ACE Study demonstrated a long lasting and profound relationship between ACEs and significant aspects of emotional well-being, health risks, disease prevalence, sexual behavior, disability, and healthcare costs, persisting over decades (1).

In the original assessment grid proposed by Felitti and his colleagues in 1998, ACEs included psychological, physical, and contact sexual abuse, physical and emotional neglect, and four items that indicate household dysfunction; living with a family member with mental illness, a family member who has been abusing a substance, a family member with criminal behavior or witnessing domestic violence against a parent. The research was conducted in two phases to facilitate mid-point correction. During the initial phase, eight types of ACEs were examined, and in the subsequent phase, two additional categories related to neglect were included (1).

These categories were selected empirically as they were found to be highly prevalent in the Weight Program they were running. The prevalence of ACE in a typical, middle-class population was surprisingly high. Each ACE was assigned a score of 1 and the ACE Score does not sum up occurrences within a specific category. The way it was scored was straightforward: each occurrence of an adverse experience from any category is assigned one point. There is no additional scoring for multiple incidents

within a specific category, and the highest score for an individual who has encountered each of the ten ACEs would be 10 (3).

To date, research that assesses ACEs and adult health outcomes has provided the majority of the data from adult recollection of childhood trauma. The validity of such retrospective studies has been subject to scrutiny as it could lead to a recall and misclassification bias (13).

This could happen in many ways. One is adult participants may have difficulties to accurately retrieve memories from their early childhood (23). They may also be less likely to report childhood traumatic experiences to avoid embarrassment or distress. Conversely, certain individuals might exaggerate or overstate adverse and abusive experiences, either to emphasize their distress or for various other motives (24,25).

A possible mitigating factor to the problem of reporting bias is that the ACE score is based not on the number of events in a category. Instead, it is based on the number of different categories of events. So how many times a person might remember being physically abused is not counted, just whether or not they recall it ever happening.

The other possible limitation of the Kaiser ACE research especially in a LIC setting is that only family-level dysfunction was inquired about, ignoring the impact of the neighborhood and the possibility of adverse experiences in the wider community (26).

Therefore, a modification of the original ACE grid that was funded by the WHO which concentrated on the variety of adversities present in low-, middle- and high-income countries. In particular, the study has shown long-term health and socioeconomic results among those who dealt with childhood adversity outside of the home, such as victims of bullying or participating in acts of community violence. Also, children are exposed to the potentially adverse effects of civil war and terrorism in various low- and middle-income nations, such as the murder of parents or friends, the loss of their home due to bombing or displacement, and the kidnapping of children for use as soldiers (2).

Other commonly used tool that is used to assess childhood trauma is the Childhood Trauma Questionnaire. It evaluates five forms of maltreatment experiences – namely, physical, sexual and emotional abuse and physical and emotional neglect – by using a

Likert-scale method to evaluate the severity of each type of experience. The CTQ demonstrated good internal consistency, test-retest reliability, and strong convergence with interviews that evaluate child trauma (27). Other screening tools that can be used to assess childhood trauma include, Trauma History Questionnaire (THQ), Childhood Experience of Care and Abuse (CECA) interview, Trauma Symptom Inventory (TSI) and Post-traumatic stress disorder (PTSD) Symptom Scale. Compared with all the other screening tools the ACE-IQ has advantages in assessing broader forms of trauma, i.e., those occurring outside of the home like bullying, community and collective violence.

2.2. Prevalence of ACEs

2.2.1 High- and Middle-Income Countries

In the original ACE study, which was conducted in U.S, San Diego, only one third of the participants had an ACE score of 0, around 15 % had an ACE Score of 4 or more, and 10% had an ACE Score of 5 or more (1).

According to a report from the CDC approximately 64% of adults in the United States had at least one type of ACE before reaching the age of 18 while about one in six (17.3%) reported experiencing four or more types of ACEs (28).

In another study done in U.S in from 2011 to 2014, 61.55% had at least 1 and 24.64% reported 3 or more ACEs. Data were collected through telephone survey among 214, 157 respondents (29).

A systematic review and meta-analysis examining the lifelong health consequences and associated annual costs of Adverse Childhood Experiences (ACEs) across Europe and North America was conducted. The analysis revealed a combined prevalence of 23.5% for individuals with one ACE and 18.7% for those with two or more ACEs in Europe. In North America, the prevalence was 23.4% for individuals with one ACE and 35% for those with two or more ACEs. ACEs were linked to around 30% of instances of anxiety and 40% of cases of depression in North America, while accounting for over a quarter of both conditions in Europe (30).

In a cross-sectional study done in the U.S, Behavioral Risk Factor Surveillance System (BRFSS) data were collected from 144,017 respondents from 25 states, that included eight ACE items during 2015–2017. Around 60% of adults in the study population encountered at least one form of ACE and approximately one in six individuals reported experiencing four or more types of ACEs. Those with a high number of ACEs had higher odds of having chronic health conditions. Adults with the highest level of ACE exposure had higher odds of having chronic health conditions when compared with those reporting no ACE exposure. For example, after adjusting for confoundings, odds of depression was 5.3 (95% CI; 4.9-5.7) (21).

A population-based cross-sectional study was done in 28 provinces across China among 11, 972 residents aged 45 years or older in 2014 (the study was published in 2021). Approximately 80.9% had been exposed to at least 1 ACE while around 18% were exposed to 4 or more ACEs. When compared to those with no ACE exposure, those with 4 or more ACEs had increased risks of having various kinds of health issues like asthma, kidney disease, liver disease, dyslipidemia, chronic lung disease, arthritis, psychiatric disorders and multiple health conditions. Furthermore, a dose-response relationship was seen between the number of ACEs and the likelihood of developing most of the chronic diseases (15).

In Saudi Arabia, a retrospective cohort study was done in 2020 and 81.8% reported exposure to four or more ACEs and when compared to those with only one ACE, those with four or more ACEs were shown to have a higher likelihood of having physical illnesses. Among the ACE categories, emotional neglect was the most common with approximately 82% (31).

2.2.2. Low Income Countries

A cross-sectional analysis of data from the Birth to Twenty Plus (Bt20+) longitudinal study was conducted in South Africa and data was collected on ACEs when the cohort

was aged between 22 and 23 years. About 88% of the participants reported at least one ACE while approximately one third reported experiencing four or more ACEs. Those who had a higher socio-economic status (both in the household and in the community) had significantly lower likelihood of reporting most of the ACEs. Those who reported four or more ACEs were more than twice likely to experience psychological distress when compared to those with less than four ACEs. (32,33).

A cross-sectional survey among university students at a public university in southwestern Uganda was conducted in 2021 and almost all students (99.8%) experienced one or more ACEs, with physical abuse being the common ACE reported (34). In Nigeria, in 2018, an institution based cross-sectional study was done to assess ACEs and psychological distress among higher education students and they found out that 86.7% had at least one ACE, 30.5% reported experiencing 2–3 ACEs, and 41.3% reported experiencing 4+ ACEs and having 4+ ACE score had a strong association (OR: 11.67) with psychological distress (35). In 2022, a study done in Botswana, found out that 73.3% had at least one ACE and 38.9% reported 3 or more ACEs (36).

2.2.3. Prevalence of ACEs in Children and Adolescents

In 2022, a descriptive study was conducted involving 1,028 children seen at a school-based clinic in the U.S. Approximately 58% of them had at least one ACE and 9.5% had four or more, similar to the prevalence of ACEs in adults (37).

In a population-based study of young adolescents in Norway in 2022, about two third of the participants reported having at least one ACE while nearly 30 % reported more than one ACE and the commonest ACE subtype was household dysfunction (38).

In a study published in 2022, assessing prevalence of ACEs in children under the age of six in the U.S, majority of them, approximately 71% had experienced zero ACEs. It was also shown that there was a graded relationship between number of ACEs and increased risk of health and developmental difficulties (39).

In a cross-sectional study done in Malawi, about 72% of adolescents (aged 10–16 years) reported four or more ACEs, which is significantly higher when compared to

other studies (this difference could be due to the scoring method they used and the tool they used). When compared to those with lower ACE scores, those with higher ACE scores were more likely to report depression (OR=3.11), post-traumatic stress disorder (OR=4.19), worse self-rated health (OR=3.72), and a higher expected likelihood of dying in the next 5 years (RR=5.02) (40).

In Ethiopia, studies on ACEs are few in number and almost all are done among high school students. One study, which was done in 2021 at a high school in Jimma found out 51.5% reported at least one and 29.4% two and 10.4 % had 4 or more ACEs (41). Another study done at Jimma which studied the association between ACEs and substance use disorder among adolescents found out that an ACE score of 3 or more was significantly associated with Khat and Alcohol use (42).

2.3. Impacts of ACEs

ACEs have been shown to be strongly associated with physical and mental health and health risk factors throughout life, as evidenced by a number of studies.

In 2017, a systematic review and meta-analysis was conducted on the effect of multiple ACEs on health and from the included studies, most were in HIC, nine from MIC and none from LICs. Compared with those with no ACEs, those with four or more ACEs were at increased risk of all health outcomes. Associations were strong for sexual risk taking, mental ill health (depression, anxiety, suicidal attempt and low life satisfaction) and problematic alcohol use (ORs of >3-6), and strongest for problematic drug use and interpersonal and self-directed violence (ORs of >7) (43).

Studies have shown that high ACE scores, independent of the health risk factors e.g. smoking cigarettes, substance abuse, and through mechanisms such as increases in inflammatory markers e.g. C-reactive protein (CRP), Tumor Necrosis Factor- α (TNF-α), and Interleukin-6 (IL-6)(17,19), can stress the body's immune and endocrine system and can increase risk of heart disease and permanent damage to the developing brain.

Repeated and prolonged activation of brain systems responsive to stress can result in increased susceptibility to various behavioral and physiological disorders throughout one's lifetime like depression, anxiety, substance abuse, cardiovascular diseases, DM, stroke (4).

Research indicates that prolonged increases in cortisol levels over an extended period can impact the functioning of various neural systems, suppress the immune response, and potentially lead to hippocampal atrophy, affecting learning and memory (5,44).

Children who have higher ACE scores are more likely to practice unhealthy habits like smoking, drinking alcohol, or disruptive behavior. Adequate parental care in early childhood is essential in regulating cortisol reactivity and ensuring appropriate HPA axis functions in response to stressors. On the other hand, lack of available and sensitive caregiving during this period could result in dysregulated cortisol levels. As a result, the risks to children of later developing maladaptive coping mechanisms and an increased risk of mental and an earlier presentation of physical illness is unmitigated.(6,3).

Significant correlations were shown to exist between various ACEs and later symptoms or diagnoses of depressive and anxiety disorders (45). A recent systematic review and meta-analysis done on ACE and associated health outcomes showed that there is a clear graded relationship for almost all health risk behaviors (tobacco use, alcohol problem, risky sexual behavior, illicit drug use, poor diet) and psychosocial outcomes studied (depressed mood, suicide attempt, poor health/quality of life, psychological distress, panic/anxiety) (14).

One study done in Indonesia found out that adolescents with at least one ACE were two 1.7 times more likely to have depressive symptoms (46).

In a study done in Ethiopia, it was shown that there was a graded relationship between ACE scores and the probability of a having depressive disorder (47).

2.3.1. CMDs in College Students

Majority of the mental disorders emerge by age 24 and college students demonstrate higher and persistent health needs (48). Students in college show persistent and greater health demands (22) and one reason for these could be adverse childhood experiences. Studies have also shown that ACEs negatively influence academic performance in students (49,49,50).

In a systematic review and meta-analysis that was done to determine the prevalence and associated factors of depression and anxiety symptoms among college students in 2022, the prevalence of depression was 33.6% and 39 % for anxiety symptoms. Those from Africa, LMIC and medical college students showed the highest prevalence of depression symptoms while those from North America, LMIC and medical college students showed the highest prevalence of anxiety (51).

In a longitudinal study done to determine the prevalence of depression and anxiety in university students in United Arab Emirates found out that 34.2 had a possible depression (PHQ 9 score of >10) and 22.3 % had a possible GAD (GAD 7 score of >10). The prevalence of major depression and GAD was found to be 7.9 and 17.5 %, respectively, in a study done in Australian University Students (52,53).

In a cross-sectional study done among medical students in Addis Ababa, Ethiopia, in 2019, the prevalence of depression and anxiety was 51.3% and 30.1% respectively and prevalence of comorbid depression and anxiety was 21.2%. A significant association was observed between anxiety and female sex, being first- and second-year student and having poor social support. A significant association was also seen between depression and age between 18–21 years old, being first- and second- year student and having one or more stressful life events in the past 6 months (54).

2.4. Prevention of ACEs

The ACEs framework has been criticized for focusing on risks without accounting for protective childhood experiences and resilience factors that may promote health and mitigate long-term health effects of early adversity (55,56). Evidences show that positive childhood experiences (PCEs), characterized by the CDC as “safe, stable, nurturing

relationships and environments” before adulthood, are linked to better adult health (57–61).

One study that was done in the U.S in 2019 found that positive childhood experiences showed dose-response associations with depression and/or poor mental health (D/PMH) and adult-reported social and emotional support (ARSES) after accounting for exposure to ACEs. Compared with those with low PCE scores, those with higher scores were 72% less likely to have D/PMH (60).

Positive childhood experiences could have enduring effects on mental and relational well-being throughout a person's life, even when faced with simultaneous adversities like ACEs. Consequently, comprehensive, multi-systemic initiatives are essential to enhance both child and adult health, fostering the often overlooked capacity to cultivate positive experiences and thrive in the face of adversity. (62).

In order to assist states and communities prevent various forms of violence and other exposures to social, economic, and other factors in the family and community that are harmful to children, the CDC has created a number of technical packages. These include: Strengthening economic supports for families, promoting social norms that protect against violence and adversity, ensuring a strong start for children, teaching skills and intervening to lessen immediate and long-term harms (e.g., by using trauma informed care) (63).

The CDC has reported that preventing ACEs will result in 15% reduction in unemployment, 16% reduction kidney disease, 24-27% reduction in respiratory problems, 33% reduction in the number of adults who smoke and 44% reduction in the number of adults with depression (64).

ACEs represent a significant public health issue with profound consequences throughout an individual's life. A comprehensive prevention approach involving multiple sectors—including public health, healthcare, education, public safety, justice, social services, and business—has the potential to mitigate the impact of ACEs.

It is important to study ACEs and their consequences in order to prevent them from happening by informing policy makers and public health specialists. Knowing the

damage ACEs have on the mental and physical health of adults, their high prevalence will inform all health practices to ensure interventions are trauma informed.

3. Conceptual Framework

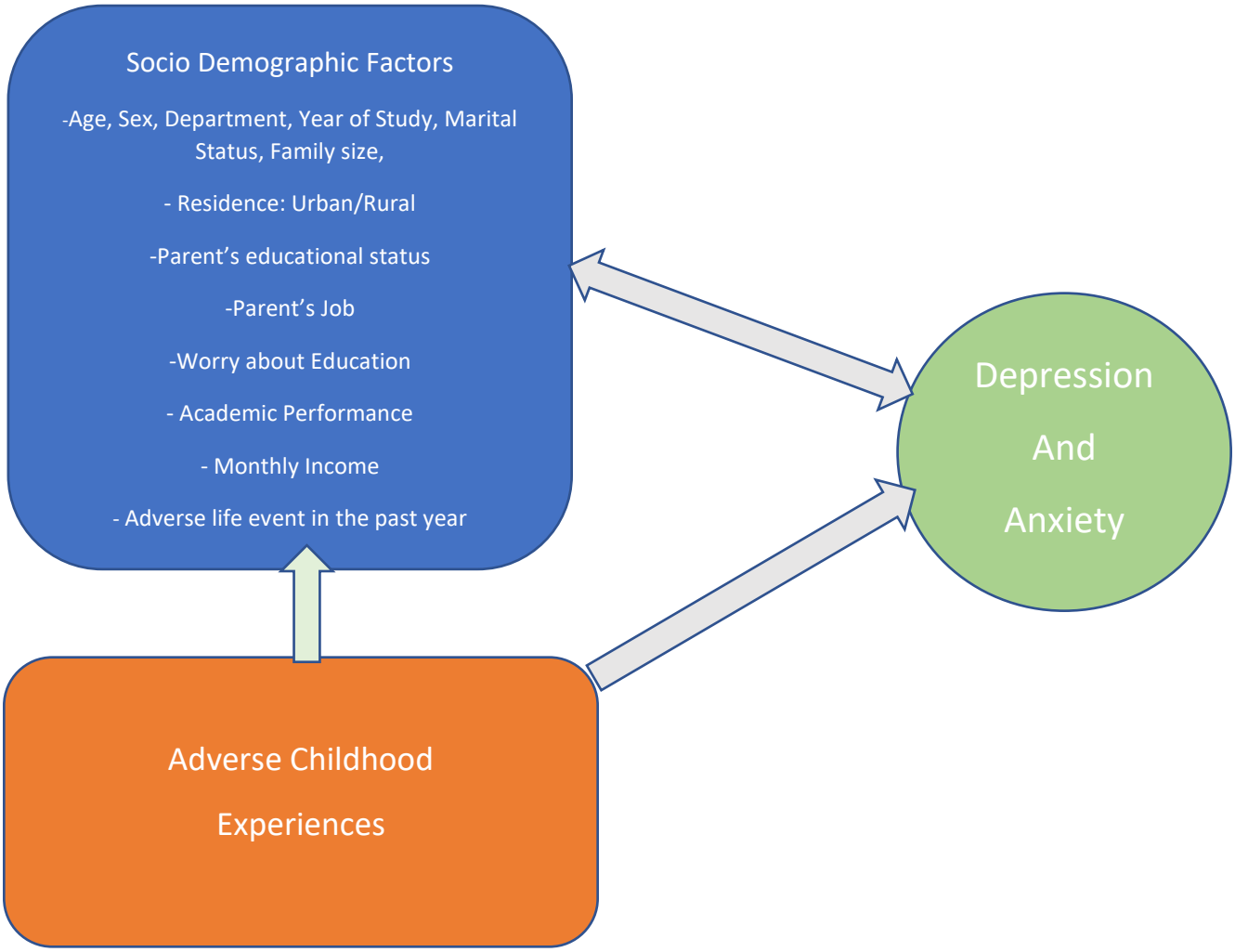

Fig. 1: Conceptual Framework

4. Objectives

The aim of this study was to explore Adverse Childhood Experiences among undergraduate students at College of Health Science, Ababa University and their association with common mental disorders.

4.1. Specific Objectives

- To determine the prevalence of ACEs among College of Health Science Students at AAU.
- To identify the common types of ACEs experienced by College of Health Science Students at AAU.
- To determine the association, both adjusted and unadjusted, between ACEs and common mental disorders.

5. Methodology

5.1. Study Design

Facility based cross-sectional study

5.2. Study Setting and Study Population

The study was conducted in Addis Ababa University College of Health Sciences among undergraduate students.

The College of Health Sciences (CHS), Addis Ababa University (AAU), is a professional training college for health sciences. It is comprised of four schools and one teaching hospital, Tikur Anbesa Specialized Hospital. The four schools are the School of Medicine, the School of Pharmacy, the School of Public Health and the School of Allied Health Sciences. The school of allied health sciences offers professional training in nursing, midwifery and medical laboratory technology.

Addis Ababa University, School of Health Sciences has currently 2992 students. 1000 of them are not assigned to any department yet. School of Medicine has 1430 students; Medicine has 1120 students, Dental Medicine has 134, Anesthesia has 85 and Medical Radiologic Technology has 91 students. The School of Nursing and Midwifery (Nursing (123), Midwifery (48) and Laboratory (103)) has a total of 274 students. School of

Pharmacy has 288 students currently. The School of Public Health has no undergraduate program.

Tikur Anbessa Specialized Hospital (TASH) is the teaching hospital of the College. It is the largest specialized hospital in Ethiopia and it serves as a training center for undergraduate and postgraduate students

The source population was all undergraduate students in the College of Health Sciences at Addis Ababa University.

5.3. Study Period

The study was conducted from June 2023 to November 2023

5.4. Inclusion Criteria

- All undergraduate College of Health Science Students at Addis Ababa University who consent to participate in the study

5.5. Exclusion Criteria

- All undergraduate students who are not assigned to any department yet (first year students).
- Students who are having severe illness which impairs them to fill the data will be excluded
- Students who are not able to communicate in Amharic language

5.6. Sample Size Determination

The sample size was determined using a single population proportion formula by assuming the prevalence of at least one ACE to be 51.1%, taken from a study conducted in Jimma high school students (41) with 95% of confidence level, and a 5% margin of error.

$$N = \frac{Z^2 P (1-P)}{D^2}$$

Where N is sample size

Z is value based on confidence interval

P is sample proportion

D is margin of error

By adding a 10% non-response rate, a total sample of 422 was obtained and after using a correction formula (since the total population is below 10,000) the final sample size was 349.

5.7. Sampling Method

The sample population was selected by stratified random sampling by taking each department within College of Health Sciences as a stratum and the total sample size was proportionally allocated based on the total number of students in each department. Then data was taken independently from each department by simple random sampling technique.

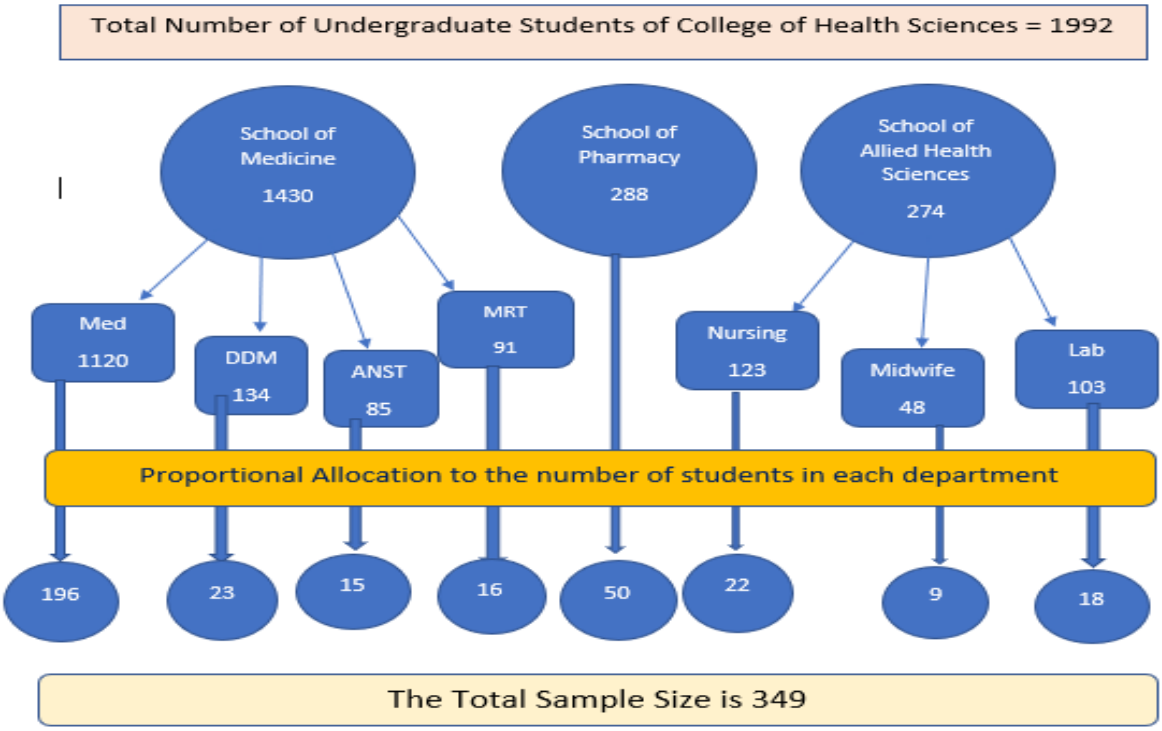

Figure 2. Sampling Method

5.8. Measures and Data Collection

Measures

Quantitative data was collected using a questionnaire containing five sections. The first section of the questionnaire is related to demographic characteristics of participants. The second section contains ACE-IQ (Adverse Childhood Experiences- International Questionnaire). The third section assesses substance use and has 5 questions under it. The fourth section contains the Patient Health Questionnaire (PHQ-9) which was used to assess the depressive symptoms of the participants. Finally Generalized Anxiety Disorder 7 (GAD-7) was used to assess the presence of anxiety symptoms in the participants in the fifth and final section.

Socio-Demographic Characteristics

Structured questionnaire was used to collect data on sociodemographic characteristics including sex, age, marital status, field of study, year of study, living area (urban or

rural), parental educational status, parental occupational status, family size growing up, self-reported academic performance, monthly pocket money, known mental illness, known physical illness, and life adversity in the past 1 year.

Adverse Childhood Experiences International Questionnaire (ACE-IQ)

The questionnaire was designed by WHO and CDC to measure ACEs in all countries. The tool is currently being validated in several countries through trial implementation as part of broader health survey. The ACE-IQ is designed for administering to people aged 18 years and above (2).

The ACE-IQ questionnaire categorizes questions about childhood experiences into 13 distinct types: physical, emotional and sexual abuse; physical and emotional neglect; violence against family members; living with a family member who abused substance; family member with mental illness; family member who has been imprisoned; having only one or no parents, parental separation or divorce; bullying; community violence; collective violence.

Response options for each question may be Yes/ No or based on a 5-point Likert scale ranging from “Never” to “Always” or based on a 4-point Likert scale ranging from “Never” to “Many times”.

The WHO has put forth two scoring methods for assessing ACE exposure. In both versions, the 13 ACE categories are dichotomized into "non-exposure" (coded as 0, indicating no ACE) and "exposure" (coded as 1, indicating one or more ACEs). This categorization results in a total score range from 0 to 13. In the binary scoring method, the lowest threshold is employed to identify ACEs, where any instance of adversity is considered exposure. For example, a single occurrence of being spanked by a family member would be considered an affirmative response for physical abuse. Whereas in the frequency scoring method, consideration is given to the level of exposure and this varies depending on the type of ACE. For instance, exposure to contact sexual abuse only requires being touched in a sexual way once, while exposure to emotional abuse necessitates being screamed at sworn at multiple times to qualify (2).

A study done among Chinese Health Science students using with the aim of validating the Simplified Chinese ACE-IQ (SC-ACE-IQ), found out that the total ACE scores were significantly different depending on the type of scoring method used. For instance, the percent of participants with four or more ACEs was nearly 3.5 times higher using the binary method compared to the frequency method. The difference in these results reflects the lower threshold employed in the binary scoring method for identifying exposure ACEs. The binary method considers any instance of adversity as constituting exposure, leading to variations in scoring compared to the frequency method, which accounts for the level or repetition of exposure. In addition, the two scoring methods also create huge differences in ACE prevalence rates at the categorical level. For example, prevalence of physical abuse was 45.1 % using the binary scoring method while it was only 9.7% while using the frequency method (65).

The frequency scoring method was used in this study to have an estimate of ACE exposure that more closely approximates international norms and to have a more conservative estimate.

ACE IQ has been found to be a reliable and valid instrument in assessing adverse childhood experiences in Africa.(66) Another study in China described the ACE-IQ as a reliable and valid screening tool for adverse childhood experiences (67).

Adaptation Process of ACE-IQ

First the ACE-IQ was translated to Amharic by a mental health expert, psychiatry resident This translated version was then back translated to English by another expert in the field with similar status. The ACE-IQ was also translated first to Amharic then back translated to English by two independent academicians who are not mental health professionals. Finally, the translated versions were evaluated by a meeting among translators and in the presence of senior mental health experts, clinical psychologist, senior psychiatrist and psychiatry residents. Following the discussion, pilot testing was done on a small sample of the target population and after another round of revision based on the feedback from the pilot testing, the questionnaire was finalized and used to collect data.

Patient Health Questionnaire 9 (PHQ 9)

The PHQ-9 is a self-report questionnaire used to assess the severity of depressive symptoms in individuals. It is a widely used tool in both clinical and research settings. The PHQ-9 consists of nine questions that ask about the presence and frequency of depressive symptoms over the past two weeks. The responses are scored on a scale from 0 to 3, corresponding to "not at all," "several days," "more than half the days," and "nearly every day."

PHQ-9 scores > 10 had a sensitivity of 88% and a specificity of 88% for major depressive disorder. Therefore, a cutoff point of >10 was used for this study. Reliability and validity of the tool have indicated it has sound psychometric properties. Internal consistency of the PHQ-9 has been shown to be high (68). It has also been translated into Amharic and has demonstrated acceptable reliability and validated to use in Ethiopia for screening depression (69).

Generalized Anxiety Disorder Scale (GAD-7)

Symptoms of generalized anxiety were assessed using the GAD-7. The GAD-7 is a self-report questionnaire designed to assess the severity of generalized anxiety disorder symptoms in adults. It is a brief and commonly used tool in clinical practice and research settings. The GAD-7 consists of seven questions that inquire about the frequency of anxiety symptoms over the past two weeks. Each question on the GAD-7 is scored on a scale from 0 to 3, corresponding to "not at all," "several days," "more than half the days," and "nearly every day." The total score can range from 0 to 21, with higher scores indicating a greater severity of generalized anxiety symptoms.

Scores 0-4 show no or minimal anxiety while scores of 5-9 show mild anxiety. Using the cutoff point of 10, the GAD-7 has a sensitivity of 89% and specificity of 82% to detect anxiety (70). Therefore, a cut-off of 10 was used in this research. The GAD-7 has good reliability and construct validity, as evidenced by strong associations with other

established measures of anxiety as well as the diagnosis of generalized anxiety disorder and its associations with depression, self-esteem, life satisfaction and resilience (71).

Substance Use

To assess substance use students will be asked whether or not they have used khat, alcohol, cigarette, cannabis or any other substance in the past 30 days at least once. Those that have reported using any substance within the prior 30 days were given a positive score. This assessment was used by previous studies (72).

5.9. Data collection procedure

A structured questionnaire which includes Socio-demographic-questionnaire, Amharic version of ACE-IQ, Amharic version of PHQ-9 and Amharic version of GAD-7 was self-administered to each student in a written document. For data collection, the primary investigator and additional facilitators, who were given instructions, distributed the questionnaire to ensure adequate data collection and sample representation to maintain quality of data collected. Each department's representatives were contacted after all the names of the students was collected from the student council. According to the list the stratified sampling was done and the representatives were given instructions on how to collect the data. Each questionnaire was put inside an envelope and the students were told that they had been chosen randomly. The students, after filling in the questionnaire, were told to put it back inside the envelope and seal it. This was done to maintain confidentiality. Frequent communication occurred with the representatives (data collectors) to check their progress and to collect the filled questionnaires.

5.10. Data Processing and Analysis

After cleaning the data, the data was entered into the latest version of SPSS version 26 for analysis. Descriptive analysis was done on all the variables. Since the dependent variables were not normally distributed Mann-Whitney test was used to compare each ACE categories with the dependent variables. Pearson correlation was also done

between the total ACE score and total PHQ-9 and GAD-7 scores. The outcome variables, total PHQ 9 and GAD 7 were not normally distributed so a logistic regression analysis was done. The outcome variables were dichotomized to binary outcomes in order to run a binary logistic regression. Multicollinearity was checked and all variables had a VIF of ≤ 5. The goodness of fit of this regression model was checked using the Hosmer-Lemeshow test and the p values for both were 0.27 and 0.20 (both not statistically significant) showing both models (for depression and anxiety respectively) were a good fit. After these assumptions were checked a binary logistic regression was done between each variable and the outcome variables, depression and anxiety, and the crude odds ratio was calculated. All variables that show p-value ≤ 0.25 in binary logistic regression and those variables that were thought to have clinical significance were entered into multivariate logistic regression to control for potential confounders. The cut off 0.25 was selected to allow for the exploration of potentially relevant associations that may not reach traditional levels of statistical significance, which is 0.05 (73).

6. Ethical Considerations

Ethical clearance was obtained from the Department of Psychiatry, College of Health Sciences, Addis Ababa University. Participation in the study was voluntary and participants signed a consent form before they started filling the questionnaire.

The data extraction sheet was anonymous and was provided to the participants in an envelope. After filling out the questionnaires, the students sealed it inside the envelope and gave it to data collectors. This was done to protect the sensitive information they were providing from anyone other than the primary investigator. Their responses were only accessed by the primary investigator and were stored safely.

Participants were given the option to not respond to questions or opt-out of the research entirely. Participants were advised to seek help or contact the primary investigator if they find the questions distressing. They were advised to contact the primary investigator or go to psychiatric OPD at Tikur Anbesa Hospital if they have suicidal wish or plan and the contact of the clinic was provided, but no one reached out so far.

7. Results

From the original sample of 349, four returned blank or incomplete making the final sample 345 which makes a response rate of 99%. In the total sample (N = 345), the participant's mean age was 22.2, with the majority being females, 58% (n =200). 86% (n=297) were from urban areas while only 14% (n=48) were from rural areas. The majority of the students were medical students 53.6% (n=185), The participants were evenly distributed according to their year of study, with most of the participants, 22% (n=76), being from third year and 13.3% (n=46) from 6th year. 64% (n=222) of the participants grew up in a family size ranging from 5 up to 8 and 9% (n=32) of the students grew up in a family size of 9 to 15. Most of the participants' parents had a college and above educational level, 64% (n=221) and 47% (n=163), for fathers and mothers respectively.

Out of the 345 undergraduate students 55% (n=190) and 30% (n=105) of them reported that they had a "good" and "very good" academic performance while only 5% (n=16) said they had a poor academic performance. Only 10% (33) of the students said they are not worried about their education at all, while 40% (n= 136) of them said they are either very much or extremely worried. 6% (n=20) of the participants said they had a known medical illness while 4% (n=15) said they had a known mental illness.

Table 1: Socio demographic Characteristics of the Participants

Types of Variables	Variables	Frequency	Percentage	Types of Variables	Variables	Frequency	Percentage
Age	19-21 22-24 25-29	140 141 64	40.9% 40.6% 18.6%	**Mother's Educational Level**	No formal Edu. 1-4 5-8 9-12 College or more Missing	17 28 52 83 163 2	4.9% 8.1% 15.1% 24.1% 47.2% 0.6%
Sex	Male Female	145 200	42% 58%	**Father's Educational level**	No formal Edu. 1-4 5-8 9-12 College or more Missing	4 19 31 67 221 3	1.2% 5.5% 9% 19.4% 64.1% 0.9%
Marital Status	Single Married	338 7	98% 2%	**Mother's Occupation**	Housewife Farmer Merchant Student Gov't Officer Private Missing	135 10 54 2 118 24 2	39.1% 2.9% 15.7% 0.6% 34.2% 7%
Where did you grow up?	Urban Rural	297 48	86.1% 13.9%	**Family Size Growing up**	0-4 5-8 9-15 Missing	74 222 32 17	21.4% 64.3% 9.3% 4.9%
Department	Medicine Dental Medicine Anesthesiology MRT Nursing Midwifery Laboratory Pharmacy	185 30 15 16 22 9 18 50	53.6% 8.7% 4.3% 4.6% 6.4% 2.6% 5.2% 14.5%	**Monthly income**	<500 500-1000 >1000	32 81 232	9.3% 23.5% 67.2%
Year of Study	Second Third Fourth Fifth Sixth	73 76 75 75 46	21.2% 22% 21.7% 21.7% 13.3%	**Academic Performance**	Poor Good Very Good Excellent	16 190 105 34	4.6% 55.1% 30.4% 9.9%
Religion	Orthodox Muslim Protestant Others	191 56 79 19	55.4% 16.2% 22.9% 5.5%	**How worried are you about your education?**	Not at all A little Very much Extremely	33 176 85 51	9.6% 51% 24.6% 14.8%
Father's Occupation	Farmer Merchant Student Gov't Officer Daily Laborer Private Missing	27 73 3 152 1 86 3	7.8% 21.2% 0.9% 44.1% 0.3% 24.9% 0.9%				

15.9% (n=55) of the participants have depressive symptoms (scored more than 10 in PHQ-9 score), 14.2% (n=49) have anxiety symptoms (scored more than 10 in GAD 7 score) and 23.2% (n=80) have used a substance the past 30 days.

Table 2: Descriptive statics of the confounding, dependent and independent variables

Known medical illness?	No Yes	325 20	94.2% 5.8%
Known mental illness?	No Yes	330 15	95.7% 4.3%
Adverse life experiences in the past year?	No Yes	264 81	76.5% 23.5%
Depression	No Yes	290 55	84.1% 15.9%
Anxiety	No Yes	296 49	85.8% 14.2%
Substance Use	No Yes	265 80	76.8% 23.2%
ACE-IQ	No Yes	69 276	20% 80% (98.6%)*

* Using the binary scoring method 98.6% of the participants have at least one ACE.

Adverse Childhood Experiences among the participants

There are two ways of scoring the ACE-IQ, the frequency and binary method. Even though the frequency method was used for this study, some descriptive analysis was done using the binary version as well in order to compare the two methods, as per the WHO recommendation. As shown in Fig. 3, using the binary method 98.6% (n=340) have at least one ACE and the majority of the students have 4 or more ACEs, 69.6% (n=240). In the frequency method 80% (n= 276) have at least one ACE and a quarter of the students have 4 or more ACEs (n=87). 65% (n=223) have physical abuse in the binary version as compared to the 10% (n=36) seen in frequency version. 40% (n=138) of the students had a positive score in bullying using the binary method while bullying

was only found in 3.5% (n=12) of the students while using the frequency method. The most prevalent type of ACE was community violence (35.4%, n=122) closely followed by household violence (34.2%, n=118,) and collective violence (29.9%, n=103) in the frequency version while community violence (92.2%, n=318)), physical abuse (64.6%, n=223) and household violence (59.4%, n=205) were the three most common ACEs in the binary method. Twenty percent (n=69) of all participants reported being sexually abused growing up (using both scoring methods).

From the types of ACEs, there was no significant difference between the two genders except for sexual abuse (significantly higher in women, 27.5% vs 9%) and community and collective violence, where both were more commonly reported by men.

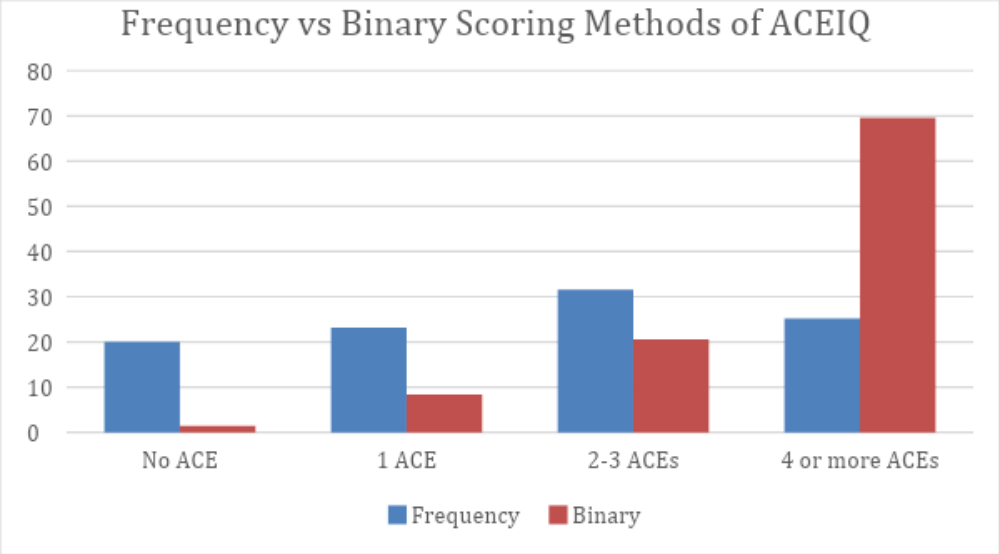

Fig 3. Comparing the Frequency and Binary Scoring Methods of ACEIQ

Comparing depression and anxiety severity scores among each ACE type with Mann-Whitney U Test

To investigate whether there are differences in depression and anxiety scores between each ACE type categories (e.g., physical abuse vs no physical abuse), a Mann-Whitney U Test was conducted. As seen in Table 3, almost all ACE types have statistically significant differences between those who have the specific ACE type and those who don't, in both depression and anxiety. For example, the Mann-Whitney U test revealed a

significant difference in both depression and anxiety between those who had sexual abuse and those who hadn't (U = 5299.5, Z = -5.72, p = 0.000 and U = 5714.5, Z = -5.17, p= 0.000, respectively). There was significant difference in both depression and anxiety between those who reported physical neglect and those who didn't (U = 745.4, Z = -3.00, p = 0.003 and U = 674.6, Z = -3.24, p = 0.001, respectively). Only household family substance use, parental death or separation and bullying didn't show any significant difference between the groups in both anxiety and depression scores.

Out of the 13 ACE types, physical neglect, emotional neglect and sexual abuse showed the strongest association with both depression and anxiety. Those who reported physical neglect, emotional neglect and sexual abuse were 8.75 times (COR 8.75; 95% CI; 2.38, 32.15), 5.12 times (COR 5.12; 2.79, 9.4) and 3.81 times (COR 3.81; 95% CI; 2.04, 7.09) more likely to have depression and 4.29 times (COR 4.29; 95% CI; 1.16, 15.82), 3.69 times (COR 3.69; 95% CI; 1.97, 6.92) and 2.78 times (COR 2.78; 95% CI; 1.45, 5.36) more likely to have anxiety respectively.

Pearson Correlation between Cumulative ACE score and mental health outcomes

There is a significant positive correlation between Cumulative ACE Score Frequency and PHQ9 Total ($r = 0.43$, $p < 0.01$) and GAD7 Total ($r = 0.33$, $p < 0.01$). This suggests that as the Cumulative ACE Score increases, there is a tendency for higher scores on the PHQ9 and GAD7 scores. There is a strong positive correlation between PHQ9 Total and GAD7 Total ($r = 0.73$, $p < 0.01$).

Table 3: Comparing the depression and anxiety severity among each ACE type with Mann-Whitney U Test

ACE Type	Depression				Anxiety			
	Mean Rank	U	p value	Median	Mean Rank	U	p value	Median
Emotional Neglect Yes: 85 (24.6%) No: 260 (75.4%)	219.59 157.77	7090	0.000	8 4	212.33 160.14	7707	0.000	6 3
Physical Neglect Yes: 10 (2.9%) No: 235 (97.1%)	265.95 170.23	745.5	0.003	11.5 4	273.05 170.01	674.5	0.001	9 3
Emotional Abuse Yes: 46 (13.3%) No: 299 (86.7%)	237.28 163.11	3920	0.000	8 4	228.93 164.39	4304	0.000	6 3
Physical Abuse Yes: 36 (10.4%) No: 309 (89.6%)	219.79 167.55	3877.5	0.003	6.5 4	220.26 167.49	3860.5	0.002	5.3 3
Sexual Abuse Yes: 69 (20%) No: 276 (80%)	234.2 157.7	5299.5	0.000	7 4	228.18 159.2	5714.5	0.000	6 3
Family Substance Use Yes: 38 (11%) No: 307 (89%)	198.12 169.89	4878.5	0.09	6 4	173.3 172.96	5821.5	0.98	4 3
Family Crime Yes: 77 (22.3%) No: 268 (77.7%)	202.81 164.44	8023	0.003	6 4	203.68 164.19	7956	0.002	5 3
Family Mental Illness Yes: 33 (9.6%) No: 312 (90.4%)	228.71 167.11	3309.5	0.001	8 4	232.62 166.69	3180.5	0.000	7 3
Parent death/separation Yes: 82 (23.8%) No: 263 (76.2%)	186.86 168.68	9646.5	0.14	4.5 4	191.18 167.33	9292.5	0.057	4.5 3
Household Violence Yes: 118 (34.2%) No: 227 (65.8%)	204.84 156.45	9635.5	0.000	6 4	201.75 158.06	10001	0.000	5 3
Bullying Yes: 12 (3.5%) No: 333 (96.5%)	211.75 171.60	1533	0.169	6 4	224.21 171.15	1383.5	0.068	5 3
Community Violence Yes: 122 (35.4%) No: 223 (54.6%)	200.97 157.7	10190	0.000	6 4	196.33 160.24	10756.5	0.001	4 3
Collective Violence Yes: 103 (29.9%) No: 242 (70.1%)	209.92 157.29	8660	0.000	6 4	201.75 160.76	9502	0.000	5 3

Univariate Analysis of Factors associated with depression

Among the many variables included in the binary logistic regression analysis, those that showed significant association (p values of <0.05) with depression were ACE score, academic performance, worry about education, known physical illness, adverse life even within the past year and substance use. Compared with those with no or one ACE, those with two or three ACEs were 3.48 times (COR 3.48; 95% CI; 1.45, 8.35) and four or more ACEs were 8.81 times (COR 8.81; 95% CI; 3.80, 20.41) more likely to have depression. Students who reported to have very good and excellent academic performance were less likely to have depression (COR 0.25; 95% CI; 0.07, 0.87 and COR 0.14; 95% CI; 0.02, 0.84 respectively) than those who reported to have a poor academic performance. Those who were extremely worried about their education were 3.85 times more likely to have depression than those who are not worried at all (COR 3.85; 95% CI; 1.87, 7.92). Participants who reported to have a known medical illness were 2.41 times (COR 2.41; 95% CI; 0.88, 6.58) more likely to have depression than those that don't. Compared to those who have not experienced any adverse life event in the past 1 year, those who have were 3.48 times (COR 3.48; 95% CI; 1.9, 6.38) more likely to have depression. Participant who reported to have used any substance in past 30 days were 1.98 times (COR 1.98; 95% CI; 1.06, 3.69) more likely to report depression.

Univariate analysis of factors associated with anxiety

From all the variables included in the binary logistic regression analysis, the variables that had significant association (p values of <0.05) with anxiety were ACE score, year of study, worry about education and adverse life event in the past 1 year. Compared with those with no or one ACE, those with two or three ACEs were 4.28 times (COR 4.28; 95% CI; 1.73, 10.59) and four or more ACEs were 7.29 times (COR 7.29; 95% CI; 2.97, 17.86) more likely to have anxiety. Those in their 6^{th} year of study had less risk of having anxiety compared to the other years (COR 0.09; 95% CI; 0.01, 0.73). Students who reported to be very much and extremely worried about their education were 3.47 (COR; 3.47; 95% CI; 1.65, 7.27) and 5.91 (COR 5.91; 95% CI; 2.68, 13.04) times more likely to have anxiety than those who were not worried at all. Participants who reported

to have experienced life adversity in the past 1 year were 2.95 times (COR 2.95; 95% CI; 1.56, 5.55) more likely to have anxiety than those who have not.

Multivariate model of factors associated with depression and anxiety

All variables that show p-value ≤ 0.25 in binary logistic regression and clinically relevant from the existing literature were entered into multivariate logistic regression to control for potential confounders.

Compared with those with no or one ACE, those with two or three ACEs were 2.73 times (aOR 2.73; 95% CI; 1.08, 6.89) and four or more ACEs were 6.17 times (aOR 6.17; 95% CI; 2.51, 15.18) more likely to have depression. Those who have experienced an adverse life even in the past year were 2.61 times (aOR 2.61; 95% CI; 1.28, 5.34) more likely to have depression than those who don't. Students who reported to have used any substance in past 30 days were 2.49 times (aOR 2.49; 95% CI; 1.06, 5.83) more likely to report depression.

Those students who reported to have two or three ACEs were 3.5 times (aOR 3.5; 95% CI; 1.31, 9.32) and those with four or more ACEs were 6.0 times (aOR 6.0; 95% CI; 2.25, 16.02) were more likely to have anxiety than those with no or one ACE. The 6th year students were less likely to report anxiety as compared to other years (aOR 0.03; 95% CI; 0.002, 0.52). Worrying about education was significantly associated with anxiety. Compared to those who reported not to worry or worry a little about their education, those who worried very much and extremely, were 3.45 times (aOR 3.45; 95% CI; 1.49, 7.96) and 4.08 times (aOR 4.08; 95% CI; 1.59, 10.43) more likely to have anxiety.

Table 4: Binary logistic Regression Analysis between each independent variables and Outcome Variables

Independent Variables	Variable Types	Depression		Anxiety	
		Crude Odds Ratio (95% CI)	P value	Crude Odds Ratio (95% CI)	P value
Categorical ACE score	**0-1 ACE** **2-3 ACEs** **4 or more ACEs**	**1** **3.48 (1.45, 8.35)** **8.81 (3.80, 20.41)**	 **0.005** **0.000**	**1** **4.28 (1.73, 10.59)** **7.29 (2.97, 17.86)**	 **0.002** **0.000**
Age of Students	19-21 22-24 25-29	1 0.68 (0.35, 1.32) 1.07 (0.5, 2.29)	 0.25 0.86	**1** **0.59 (0.3, 1.17)** **0.66 (0.28, 1.56)**	 **0.13** **0.34**
Sex of Students	**Male** **Female**	**1** **1.45 (0.79, 2.65)**	 **0.22**	1 1.77 (0.92, 3.39)	 0.83
Marital Status	Single Married	1 0.87 (0.10, 7.42)	 0.90	1 1.00 (0.11, 8.54)	 0.99
Place you grew up	Urban Rural	1 0.88 (0.37, 2.09)	 0.78	1 1.03 (0.43, 2.46)	 0.93
Family Size growing up	0-4 5-8 9-15	1 0.73 (0.37, 1.44) 0.56 (0.17, 1.84)	 0.37 0.34	1 0.86 (0.40, 1.82) 1.60 (0.55, 4.60)	 0.69 0.38
Religion	Orthodox Muslim Protestant Others	1 0.73 (0.30, 1.77) 0.92 (0.44, 1.90) 1.84 (0.61, 5.48)	 0.49 0.83 0.27	1 1.10 (0.46, 2.61) 1.18 (0.56, 2.54) 1.77 (0.54, 5.76)	 0.81 0.64 0.34
Year of Study	2nd Year 3rd Year 4th Year 5th Year 6th Year	**1** **1.46 (0.64, 3.32)** **0.52 (0.19, 1.41)** **1.16 (0.49, 2.72)** **0.62 (0.20, 1.89)**	 **0.36** **0.20** **0.72** **0.40**	**1** **1.21 (0.54, 2.68)** **0.43 (0.16, 1.14)** **0.64 (0.26, 1.57)** **0.09 (0.01, 0.73)**	 **0.63** **0.09** **0.33** **0.02**

Department	Medicine	1		1	
	Dental	0.95 (0.34, 2.68)	0.93	1.03 (0.36, 2.91)	0.95
	Anesthesia	0.34 (0.43, 2.69)	0.30	0.36 (0.04, 2.91)	0.34
	MRT	1.10 (0.29, 4.09)	0.88	1.19 (0.32, 4.44)	0.79
	Nursing	0.22 (0.30, 1.75)	0.15	0.24 (0.03, 1.89)	0.17
	Midwifery	0	0.99	0	0.99
	Laboratory	0.95 (0.26, 3.49)	0.94	0.30 (0.03, 2.37)	0.25
	Pharmacy	1.19 (0.54, 2.63)	0.65	0.98 (0.42, 2.30)	0.97
Mother's Educational Level	Below 9th grade	1		1	
	Above 9th grade	0.97 (0.53, 1.79)	0.94	1.16 (0.61, 2.19)	0.74
Father's Educational level	Below 9th grade	1		1	
	Above 9th grade	1.64 (0.66, 4.04)	0.28	1.36 (0.55, 3.39)	0.50
Mother's Occupation	Housewife	1		1	
	Gov. Employee	1.04 (0.53, 2.04)	0.90	1.33 (0.65, 2.70)	0.42
	Private	1.05 (0.51, 2.17)	0.87	1.14 (0.52, 2.48)	0.73
Father's Occupation	Farmer	1		1	
	Gov. Employee	0.66 (0.22, 1.96)	0.46	0.82 (0.25, 2.63)	0.74
	Private	0.97 (0.34, 2.76)	0.95	1.06 (0.34, 3.34)	0.91
Academic Performance	Poor	**1**		1	
	Good	**0.53 (0.17, 1.62)**	**0.26**	0.56 (0.17, 1.86)	0.34
	Very Good	**0.25 (0.07, 0.87)**	**0.03**	0.38 (0.10, 1.39)	0.14
	Excellent	**0.14 (0.02, 0.84)**	**0.03**	0.30 (0.58, 1.54)	0.15
How worrying is your education?	A little	**1**		**1**	
	Very Much	**1.52 (0.74, 3.10)**	**0.25**	**3.47 (1.65, 7.27)**	**0.001**
	Extremely	**3.85 (1.87, 7.92)**	**0.000**	**5.91 (2.68, 13.04)**	**0.000**
Known Mental Illness		**1.98 (0.61, 6.49)**	**0.25**	**2.30 (0.7, 7.54)**	**0.16**
Known Physical Illness		**2.41 (0.88, 6.58)**	**0.08**	0.65 (0.14, 2.92)	0.58
Adverse Life event in the past 1 year?		**3.48 (1.90, 6.38)**	**0.000**	**2.95 (1.56, 5.55)**	**0.001**
Substance Use		**1.98 (1.06, 3.69)**	**0.03**	**0.60 (0.27, 1.35)**	**0.22**

Bold results are those with p value of <0.25

Table 5: Multivariable Model of Factors Associated with Depression and Anxiety

Independent Variables	Variable Types	Depression		Anxiety	
		Adjusted Odds Ratio (95% CI)	P value	Adjusted Odds Ratio (95% CI)	P value
Categorical ACE score	**0-1 ACE** **2-3 ACEs** **4 or more ACEs**	**1** **2.73 (1.08, 6.89)** **6.17 (2.51, 15.18)**	 **0.03** **0.00**	**1** **3.50 (1.31, 9.32)** **6.00 (2.25, 16.02)**	 **0.01** **0.00**
Age of Students	19-21 22-24 25-29	1 0.79 (0.26, 2.39) 1.49 (0.32, 6.94)	 0.68 0.60	1 1.10 (0.35, 3.49) 3.18 (0.57, 17.57)	 0.86 0.18
Sex of Students	Male Female	1 1.51 (0.71, 3.24)	 0.27	1 0.96 (0.43, 2.13)	 0.96
Year of Study	2nd Year 3rd Year 4th Year 5th Year 6th Year	1 1.51 (0.55, 4.11) 0.59 (0.14, 2.47) 0.67 (0.14, 3.15) 0.45 (0.06, 3.33)	 0.42 0.48 0.62 0.44	1 1.00 (0.37, 2.68) 0.42 (0.09, 1.82) 0.36 (0.07, 1.87) **0.03 (0.002, 0.52)**	 0.99 0.24 0.22 **0.01**
Academic Performance	Poor Good Very Good Excellent	1 1.04 (0.28, 3.86) 0.56 (0.13, 2.38) 0.20 (0.02, 1.54)	 0.95 0.43 0.12	1 1.43 (0.34, 5.89) 1.06 (0.23, 4.88) 0.48 (0.07, 3.37)	 0.61 0.93 0.46
How worrying is your education?	A little Very much Extremely	1 1.15 (0.51, 2.62) 1.79 (0.74, 4.32)	 0.72 0.19	**1** **3.45 (1.49, 7.96)** **4.08 (1.59, 10.43)**	 **0.004** **0.003**
Known Mental Illness		2.22 (0.54, 8.99)	0.26	2.60 (0.60, 11.26)	0.20
Known Physical Illness		1.22 (0.34, 4.31)	0.75	0.35 (0.06, 1.99)	0.23
Adverse Life event in the past 1 year?		**2.61 (1.28, 5.34)**	**0.008**	1.48 (0.69, 3.13)	0.30
Substance Use		**2.49 (1.06, 5.83)**	**0.03**	0.78 (0.28, 2.13)	0.63

8. Discussion

The purpose of this study was to explore the prevalence of adverse childhood experiences among university students and to assess the relationship between ACEs and common mental disorders. This study was the first in the country to use the WHO ACE-IQ questionnaire to assess childhood trauma. Even though a frequency version of this tool was used, some descriptive analysis was done using the binary scoring method in order to compare the two methods with each other and with other studies done worldwide.

Majority of the participants (80%, n=276) have reported experiencing at least one of the 13 ACEs assessed in this study. This result is significantly higher when compared with another study done in Ethiopia among high school students in Jimma town (51.1%) (41). However, it is comparable with similar studies done among university students in Africa, for example in Uganda (99.8%) (34), Malawi (99%) (40), Nigeria (86.7%)(35) , Botswana (73%) (36), Tunisia (74.8%)(74) and Zambia (58.3%) (75). These differences can be explained mainly by the use of different assessment tools. This study used the 13 item ACE-IQ and this could increase the probability of having a higher ACE score. Even though the same tool (WHO ACE-IQ) that this study utilized is used in Uganda, Nigeria and Malawi the higher percentage in those studies could be explained by the fact that they all used the binary scoring method while this study used the frequency method, which is a more conservative scoring method and has a higher threshold to detect ACEs. When the binary method was used, 98.6% of the participants reported at least one ACE which is very close to the Ugandan study.

Three studies that used the same tool, the same scoring method and 2 of these were done in university students were found. The first is in China, in a sample of 433 Chinese young adults, where nearly 75% of the participants reported at least one ACE and 31% reported three or more ACEs (67). The second is in Vietnam where 2,099 university students across eight provinces in Vietnam were included and 76% reported at least one ACE and 37% reported three or more ACEs (76). The third study was done among

939 Korean college students where 50% reported at least one ACE and 15% reported three or more ACEs (77).

When compared to studies done in HIC, this study showed a higher prevalence of ACEs just like the other African countries. For example, studies done in the U.S in 2017, 2019 and 2022 showed a prevalence of 61.5%, 60.9% and 58% of the participants had at least 1 ACE respectively(21,29,37). In a population-based study of young adolescents in Norway in 2022, 65.8% had experienced at least one ACE (38). A population based cross sectional study done in China in 2021 showed that 80.9% had been exposed to at least 1 ACE (15). The U.S.-based studies typically exclude three domains captured in the ACE-IQ (bullying, community violence, and collective violence). When these are excluded to make the results more comparable, this study showed that nearly 70% of the participants had reported at least one ACE which is close to the studies done in the U.S.

This study found that more than half of the participants (56.8%, n=196) reported to have experienced 2 or more ACEs and one fourth (25.2%, n=87) of the participants had experienced 4 or more ACEs. This shows that various types of ACEs coexist and that most of the participants are exposed to more than one type of adversity, which could lead to worse mental and physical outcomes in adulthood. This is comparable to many studies done in Africa as well as in HIC worldwide (15,30,34,35,38,40,41,74,78).

The most common types of ACEs found in this study were community violence (35.4%, n=122), closely followed by domestic violence (34.2%, n=118), collective violence (29.9%, n=103), emotional neglect (24.6%, n=85) and parental death or separation (23.8%, n=82). When we compare this result with other studies that used the same tool and the same scoring method, in a study done in China in 2022 emotional neglect (31.6%), household member treated violently (26.1%), death of one or both parents, parental separation or divorce (16.8%), and sexual abuse (15.4%) were the most common types of ACEs reported (65). In Uganda the commonest types of ACEs reported by students were physical abuse, community violence, emotional neglect, household dysfunction and emotional abuse (99.8%, 80.7%, 68%, 66.3% and 57.3%) (34). In a study done in Ethiopia, using the 10 item ACE questionnaire, the most

common form of ACE was emotional abuse (20.3%), followed by physical abuse (15.8), parental divorce (15.8) and household member incarceration (13.9%) (42). It is difficult to compare the Ethiopian study done in Jimma to this study as different tools were used to assess for ACEs and the study population is also different.

Out of the 13 ACE categories neglect (both physical and emotional) and sexual abuse showed the strongest association with both depression and anxiety. Many studies have shown that both neglect and sexual abuse are strongly associated with multiple psychiatric disorders(79–81).

A systematic review and meta-analysis that was done in 2010 which included more than 3 million participants found that there was a statistically significant association between sexual abuse and a lifetime diagnosis of anxiety disorder (OR, 3.09) and depression (OR, 2.66) (82).

In this study, the prevalence of childhood sexual abuse was significant 20% (n=69) and is comparable with most African and worldwide studies(83–85). It was also significantly higher in women than in men (27.5% vs 9%). This is comparable to the studies done in Ethiopia (25 vs 8), Malawi (8% vs 5%), Zimbabwe (32.5% vs 8.9%) and South Africa (39.1% vs 16.7%) (40,42,85,86)).

The reason that community and collective violence were among the commonest forms of ACEs reported in this study could be due to the fact that our country, Ethiopia, has been and is still in an ongoing internal civil war and conflict. The studies done in Ethiopia previously didn’t include questions about trauma from outside the home like bullying, witnessing community violence and collective violence. This study showed that these forms of childhood adversities are very common and need to be considered while assessing childhood trauma in a country like ours where exposure to war and regional conflict is common.

This study found that there is a graded relationship between ACEs and common mental health disorders, depression and anxiety. In other words, the odds of having depression or anxiety increased with the increasing level of ACE exposure. This result is consistent with other studies in Africa as well as worldwide (15–17,34,36).

The study also showed that those who reported to have very good and excellent academic performances had lower chance of having depression as compared to those who reported to have poor academic performance. Worrying about education, having known medical illness, experiencing adverse life experience in the past 1 year and substance use had a positive significant relationship with depression. Those who were 6th year students, medical interns, had a lower risk of having anxiety as compared to the other years. This could be due to the fact that they are already qualified doctors and on the verge of graduating. Worrying about education and experiencing adverse life event in the past 1 year were also significantly associated with having anxiety symptoms. These results show that there could be other factors that contribute to the development of depression and anxiety other than adverse childhood experiences. However, after controlling for all these confounding variables, there was still a significant relationship between ACEs and depression and anxiety.

The findings in this study suggest a need to explore ways to address student anxiety and depression in higher education institutions in the country because of the significant number of students affected. One pathway to the development of common mental disorders is through the accumulation of childhood adversities. Early identification and interventions directed towards addressing the potential consequences of ACE are critical in improving the general health of students. Studies have shown that ACEs could predict worsening of mental health (depression, anxiety and suicidality) among college students suggesting that screening for ACEs could be valuable in identifying individuals at a heightened risk of worsening mental health. Implementing stress-related interventions may prove beneficial for students with elevated levels of ACEs (87).

Some evidences show that routine ACE screening within primary care settings could also be one way to help in early identification of high-risk population (88). The screenings can be done at pediatrics or adult clinics. Although some clinicians raised their concern that patients might find the ACE screening questions too invasive many studies have shown that most patients felt that talking about ACEs strengthened their relationship with their physician. Clinicians also reported that they understood their patient's background more and that they had increased empathy. The other concern

was that adding another screening tool would be burdensome for practices but most research showed that these ACE screens rarely took more than 5 minutes. If there are appropriate linkages with an interdisciplinary team, including behavioral health, psychiatry, and social work, clinicians would be more willing to screen for ACEs at primary care settings and this would be one area of early intervention for ACEs (89).

Interventions for prevention of ACEs should be at multiple levels, including homes, schools, and communities and should focus on creating positive childhood experiences i.e., safe, stable, nurturing relationships and environments before adulthood(55,59–61).

8.1. Limitations and Strengths

As this study was a cross sectional study causality cannot be inferred. The other limitation of this study is recall and social desirability biases which might reduce accuracy of self-reported adverse childhood experiences. Since the study was done among undergraduate students in Addis Ababa University, the findings may not be generalizable to the whole population.

The strengths of this study could be the fact that it used the WHO-ACE IQ questionnaire after a process of adaptation was undertaken and this could serve as a good input for other studies in the future. In addition, three additional domains of childhood adversities were assessed: bullying, community violence and collective violence which previous studies in the country did not include. The other strength could be using a stratified sampling technique which helps increase the precision and representativeness of the sample. This study also used the frequency scoring method for analysis in order to not overestimate the findings. It also used the binary scoring method in order to compare the two methods and with other studies.

9. Conclusion

There is a high prevalence of depression and anxiety among undergraduate College of Health Science students of Addis Ababa University. Adverse childhood experiences are also highly prevalent among the participants. There was a graded relationship between ACEs with both anxiety and depression without controlling confounding variables. The association was still significant after controlling for confounding variables.

9.1. Recommendations

Since the prevalence of ACEs is high among undergraduate university students and they are seen to be associated with common mental illness, we recommend counselling services that give proper psychological aid to be established among higher educational institutions. We also recommend for student clinics at AAU to screen for ACEs as they are shown to be highly related with common mental disorders.

Steps should also be taken in creating awareness among College of Health Science students so that they should seek professional help if they have experienced childhood adversities or have signs and symptoms of common mental disorders. The medical teaching environment is known for being stressful, burdensome and at times harsh and this could be retraumatizing for those students who had adverse childhood experiences. Therefore, we recommend working with medical associations in the country on how to create a safe and nurturing teaching environment in our medical schools.

We believe the community needs help and support to create an environment which is safe and conducive for the healthy development of children. Therefore, we recommend for policies that target prevention and early detection of childhood adversities that involve parents, teachers, schools, colleges, hospitals and religious institutions. One way to do this could be by creating awareness for the public on how to create positive childhood experiences and their significance in the future mental and physical health of children.

This study was done in undergraduate students in Addis Ababa Ethiopia, so the findings might not be generalizable to the whole population. Therefore, we recommend a wider population study to be done with a larger representative sample.

10. References

1. 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 May;14(4):245–58.

2. Adverse Childhood Experiences International Questionnaire (ACE-IQ) [Internet]. [cited 2023 Apr 18]. Available from: https://www.who.int/publications/m/item/adverse-childhood-experiences-international-questionnaire-(ace-iq)

3. Ruth A. Lanius, Eric Vermetten, Clare Pain. The impact of early life trauma on health and disease: The Hidden Epidemic. Cambridge University Press, 2010 .

4. McEwen BS. Central effects of stress hormones in health and disease: Understanding the protective and damaging effects of stress and stress mediators. Eur J Pharmacol. 2008 Apr 7;583(2–3):174–85.

5. Lupien SJ, McEwen BS, Gunnar MR, Heim C. Effects of stress throughout the lifespan on the brain, behaviour and cognition. Nat Rev Neurosci. 2009 Jun;10(6):434–45.

6. Boullier M, Blair M. Adverse childhood experiences. Paediatrics and Child Health. 2018 Mar;28(3):132–7.

7. Carlson EA. A prospective longitudinal study of attachment disorganization/disorientation. Child Dev. 1998 Aug;69(4):1107–28.

8. Pinto-Cortez C, Peñaloza-Díaz G, Martínez N, Díaz S, Valdovino N, Zavala M, et al. Adverse childhood experiences and psychopathology in adolescents from northern Chile: the moderating role of the attachment style. Psicol Reflex Crit. 2023 Nov 28;36(1):37.

9. Hughes K, Bellis MA, Hardcastle KA, Sethi D, Butchart A, Mikton C, et al. The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. Lancet Public Health. 2017 Aug;2(8):e356–66.

10. Gardner MJ, Thomas HJ, Erskine HE. The association between five forms of child maltreatment and depressive and anxiety disorders: A systematic review and meta-analysis. Child Abuse & Neglect. 2019 Oct 1;96:104082.

11. Cluver L, Orkin M. Cumulative risk and AIDS-orphanhood: Interactions of stigma, bullying and poverty on child mental health in South Africa. Social Science & Medicine. 2009 Oct 1;69(8):1186–93.

12. Hailes HP, Yu R, Danese A, Fazel S. Long-term outcomes of childhood sexual abuse: an umbrella review. The Lancet Psychiatry. 2019 Oct 1;6(10):830–9.

13. Reuben A, Moffitt TE, Caspi A, Belsky DW, Harrington H, Schroeder F, et al. Lest we forget: comparing retrospective and prospective assessments of adverse childhood experiences in the prediction of adult health. J Child Psychol Psychiatry. 2016 Oct;57(10):1103–12.

14. Petruccelli K, Davis J, Berman T. Adverse childhood experiences and associated health outcomes: A systematic review and meta-analysis. Child Abuse Negl. 2019 Nov;97:104127.

15. Lin L, Wang HH, Lu C, Chen W, Guo VY. Adverse Childhood Experiences and Subsequent Chronic Diseases Among Middle-aged or Older Adults in China and Associations With Demographic and Socioeconomic Characteristics. JAMA Netw Open. 2021 Oct 1;4(10):e2130143.

16. Hughes K, Bellis MA, Hardcastle KA, Sethi D, Butchart A, Mikton C, et al. The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. Lancet Public Health. 2017 Aug;2(8):e356–66.

17. Iob E, Lacey R, Steptoe A. Adverse childhood experiences and depressive symptoms in later life: Longitudinal mediation effects of inflammation. Brain, Behavior, and Immunity. 2020 Nov 1;90:97–107.

18. Kessler RC, Amminger GP, Aguilar-Gaxiola S, Alonso J, Lee S, Ustün TB. Age of onset of mental disorders: a review of recent literature. Curr Opin Psychiatry. 2007 Jul;20(4):359–64.

19. Li Y, Jinxiang T, Shu Y, Yadong P, Ying L, Meng Y, et al. Childhood trauma and the plasma levels of IL-6, TNF-α are risk factors for major depressive disorder and schizophrenia in adolescents: A cross-sectional and case-control study. J Affect Disord. 2022 May 15;305:227–32.

20. David Walsh, Gerry McCartney, Michael Smith, Gillian Armour. Relationship between childhood socioeconomic position and adverse childhood experiences (ACEs): a systematic review | Journal of Epidemiology & Community Health [Internet]. [cited 2023 May 24]. Available from: https://jech.bmj.com/content/73/12/1087.abstract

21. 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. MMWR Morb Mortal Wkly Rep. 2019 Nov 8;68(44):999–1005.

22. Committee on Improving the Health, Safety, and Well-Being of YoungAdults, Board on Children, Youth, and Families, Institute of Medicine, National Research Council. Investing in the Health and Well-Being of Young Adults [Internet]. Bonnie RJ, Stroud C, Breiner H, editors. Washington (DC): National Academies Press (US); 2015 [cited 2023 May 13]. Available from: http://www.ncbi.nlm.nih.gov/books/NBK284787/

23. Usher JA, Neisser U. Childhood amnesia and the beginnings of memory for four early life events. J Exp Psychol Gen. 1993 Jun;122(2):155–65.

24. Hardt J, Rutter M. Validity of adult retrospective reports of adverse childhood experiences: review of the evidence. J Child Psychol Psychiatry. 2004 Feb;45(2):260–73.

25. Colman I, Kingsbury M, Garad Y, Zeng Y, Naicker K, Patten S, et al. Consistency in adult reporting of adverse childhood experiences. Psychological Medicine. 2016 Feb;46(3):543–9.

26. Wade R, Cronholm PF, Fein JA, Forke CM, Davis MB, Harkins-Schwarz M, et al. Household and community-level Adverse Childhood Experiences and adult health outcomes in a diverse urban population. Child Abuse Negl. 2016 Feb;52:135–45.

27. Bernstein DP, Stein JA, Newcomb MD, Walker E, Pogge D, Ahluvalia T, et al. Development and validation of a brief screening version of the Childhood Trauma Questionnaire. Child Abuse & Neglect. 2003 Feb 1;27(2):169–90.

28. Centers for Disease Control and Prevention [Internet]. 2021 [cited 2023 Jun 14]. Preventing Adverse Childhood Experiences. Available from: https://www.cdc.gov/vitalsigns/aces/index.html

29. Merrick MT, Ford DC, Ports KA, Guinn AS. Prevalence of Adverse Childhood Experiences From the 2011-2014 Behavioral Risk Factor Surveillance System in 23 States. JAMA Pediatr. 2018 Nov 1;172(11):1038–44.

30. 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. The Lancet Public Health. 2019 Oct;4(10):e517–28.

31. AlHemyari AH, Al-Zamil NA, Shaikh AY, Al-Eidi DA, Al-Dahlan HW, Al-Shamekh SS. Prevalence of adverse childhood experiences and their relationship to mental and physical illnesses in the Eastern Region of Saudi Arabia. Brain Behav. 2022 Jul;12(7):e2668.

32. Manyema M, Richter LM. Adverse childhood experiences: prevalence and associated factors among South African young adults. Heliyon. 2019 Dec;5(12):e03003.

33. Naicker SN, Norris SA, Richter LM. Secondary analysis of retrospective and prospective reports of adverse childhood experiences and mental health in young adulthood: Filtered through recent stressors. eClinicalMedicine [Internet]. 2021 Oct 1 [cited 2023 Dec 22];40. Available from: https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(21)00374-6/fulltext#seccesectitle0021

34. Muwanguzi M, Kaggwa MM, Najjuka SM, Mamun MA, Arinaitwe I, Kajjimu J, et al. Exploring adverse childhood experiences (ACEs) among Ugandan university students: its associations with academic performance, depression, and suicidal ideations. BMC Psychol. 2023 Jan 13;11(1):11.

35. Samson Agbaje, Chinwe Patience Nnaji, Evelyn Nwanebe Nwagu, Cylia Nkechi Iweama, Prince Christian Ifeanachor Umoke, Lawretta Eyuche Ozoemena & Charles Chike Abba.

Archives of Public Health. 2021 [cited 2023 May 15]. Adverse childhood experiences and psychological distress among higher education students in Southeast Nigeria: an institutional-based cross-sectional study | Archives of Public Health | Full Text. Available from: https://archpublichealth.biomedcentral.com/articles/10.1186/s13690-021-00587-3

36. Amone-P'Olak K. Prevalence, distribution and attributable risks of adverse childhood experiences in different family types: A survey of young adults in Botswana. Child Abuse Negl. 2022 Apr;126:105513.

37. Gaylord NM, Bland T, Munoz L, Ross R, Olson C. Prevalence and Impact of Adverse Childhood Experiences in an Interdisciplinary, School-Based Pediatric Clinic. J Pediatr Health Care. 2022;36(2):e1–10.

38. Broekhof R, Nordahl HM, Bjørnelv S, Selvik SG. Prevalence of adverse childhood experiences and their co-occurrence in a large population of adolescents: a Young HUNT 3 study. Soc Psychiatry Psychiatr Epidemiol. 2022 Dec;57(12):2359–66.

39. Webster EM. The Impact of Adverse Childhood Experiences on Health and Development in Young Children. Glob Pediatr Health. 2022 Feb 26;9:2333794X221078708.

40. Kidman R, Piccolo L, Kohler HP. Adverse Childhood Experiences: Prevalence and Association With Adolescent Health in Malawi. Am J Prev Med. 2020 Feb;58(2):285–93.

41. Tsehay M, Necho M, Belete A, Belayneh Z. Socio-Demographic and Environmental Determinants of Adverse Childhood Experience among School-Going Adolescents in Jimma town, Jimma, Southwest Ethiopia. TOPSYJ. 2021 Apr 16;14(1):62–8.

42. Mekonnen T, Mogesie N, Asmare B, Werkua M. Adverse childhood experiences and their Alcohol, and chat Consumption among school-going adolescents, Ethiopia: Cross-sectional study. Arch Psychiatr Ment Health. 2020 Nov 5;4(1):076–83.

43. The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis - PubMed [Internet]. [cited 2023 May 15]. Available from: https://pubmed.ncbi.nlm.nih.gov/29253477/

44. Lupien SJ, de Leon M, de Santi S, Convit A, Tarshish C, Nair NP, et al. Cortisol levels during human aging predict hippocampal atrophy and memory deficits. Nat Neurosci. 1998 May;1(1):69–73.

45. Sahle BW, Reavley NJ, Li W, Morgan AJ, Yap MBH, Reupert A, et al. The association between adverse childhood experiences and common mental disorders and suicidality: an umbrella review of systematic reviews and meta-analyses. Eur Child Adolesc Psychiatry. 2022 Oct 1;31(10):1489–99.

46. Mustikaningtyas M, Pinandari AW, Setiyawati D, Wilopo SA. Are Adverse Childhood Experiences Associated with Depression in Early Adolescence? An Ecological Analysis Approach Using GEAS Baseline Data 2018 in Indonesia. Open Access Maced J Med Sci. 2022 Jun 25;10(E):1844–51.

47. Tsehay M, Necho M, Mekonnen W. The Role of Adverse Childhood Experience on Depression Symptom, Prevalence, and Severity among School Going Adolescents. Rybakowski JK, editor. Depression Research and Treatment. 2020 Mar 18;2020:5951792.

48. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. Arch Gen Psychiatry. 2005 Jun;62(6):593–602.

49. Slade EP, Wissow LS. The influence of childhood maltreatment on adolescents' academic performance. Economics of Education Review. 2007 Oct 1;26(5):604–14.

50. Watt TT, Hartfield K, Kim S, Ceballos N. Adverse childhood experiences contribute to race/ethnic differences in post-secondary academic performance among college students. Journal of American College Health. 2021 Jul 9;0(0):1–9.

51. Li W, Zhao Z, Chen D, Peng Y, Lu Z. Prevalence and associated factors of depression and anxiety symptoms among college students: a systematic review and meta-analysis. J Child Psychol Psychiatry. 2022 Nov;63(11):1222–30.

52. Awadalla S, Davies EB, Glazebrook C. A longitudinal cohort study to explore the relationship between depression, anxiety and academic performance among Emirati university students. BMC Psychiatry. 2020 Sep 11;20(1):448.

53. Farrer LM, Gulliver A, Bennett K, Fassnacht DB, Griffiths KM. Demographic and psychosocial predictors of major depression and generalised anxiety disorder in Australian university students. BMC Psychiatry. 2016 Jul 15;16:241.

54. Kebede MA, Anbessie B, Ayano G. Prevalence and predictors of depression and anxiety among medical students in Addis Ababa, Ethiopia. Int J Ment Health Syst. 2019;13:30.

55. Sege RD, Browne CH. Responding to ACEs With HOPE: Health Outcomes From Positive Experiences. Academic Pediatrics. 2017 Sep 1;17(7):S79–85.

56. Ellis WR, Dietz WH. A New Framework for Addressing Adverse Childhood and Community Experiences: The Building Community Resilience Model. Academic Pediatrics. 2017 Sep 1;17(7, Supplement):S86–93.

57. Garner A, Yogman M, COMMITTEE ON PSYCHOSOCIAL ASPECTS OF CHILD AND FAMILY HEALTH, SECTION ON DEVELOPMENTAL AND BEHAVIORAL PEDIATRICS, COUNCIL ON EARLY CHILDHOOD. Preventing Childhood Toxic Stress: Partnering With Families and Communities to Promote Relational Health. Pediatrics. 2021 Aug;148(2):e2021052582.

58. Schofield TJ, Lee RD, Merrick MT. Safe, Stable, Nurturing Relationships as a Moderator of Intergenerational Continuity of Child Maltreatment: A Meta-Analysis. J Adolesc Health. 2013 Oct;53(4 0):S32–8.

59. Crandall A, Miller JR, Cheung A, Novilla LK, Glade R, Novilla MLB, et al. ACEs and counter-ACEs: How positive and negative childhood experiences influence adult health. Child Abuse Negl. 2019 Oct;96:104089.

60. Bethell C, Jones J, Gombojav N, Linkenbach J, Sege R. Positive Childhood Experiences and Adult Mental and Relational Health in a Statewide Sample: Associations Across Adverse Childhood Experiences Levels. JAMA Pediatr. 2019 Nov 1;173(11):e193007.

61. Huang CX, Halfon N, Sastry N, Chung PJ, Schickedanz A. Positive Childhood Experiences and Adult Health Outcomes. Pediatrics. 2023 Jul 1;152(1):e2022060951.

62. VanderWeele TJ, McNeely E, Koh HK. Reimagining Health—Flourishing. JAMA. 2019 May 7;321(17):1667–8.

63. National Center for Injury Prevention and Control, Debra E. Houry, MD, MPH, Director. Preventing Adverse Childhood Experiences (ACEs): Leveraging the Best Available Evidence. CDC; 2019.

64. We Can Prevent Childhood Adversity |Violence Prevention|Injury Center|CDC [Internet]. 2023 [cited 2023 Dec 23]. Available from: https://www.cdc.gov/violenceprevention/communicationresources/infographics/preventchildhoodadversity.html

65. Chen W, Yu Z, Wang L, Gross D. Examining Childhood Adversities in Chinese Health Science Students Using the Simplified Chinese Version of the Adverse Childhood Experiences-International Questionnaire (SC-ACE-IQ). ADV RES SCI. 2022 Dec;3(4):335–46.

66. Kazeem OT. A Validation of the Adverse Childhood Experiences Scale in Nigeria. Research on Humanities and Social Sciences. 2015;5(11):18–23.

67. Ho GWK, Chan ACY, Chien WT, Bressington DT, Karatzias T. Examining patterns of adversity in Chinese young adults using the Adverse Childhood Experiences-International Questionnaire (ACE-IQ). Child Abuse Negl. 2019 Feb;88:179–88.

68. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med. 2001 Sep;16(9):606–13.

69. Gelaye B. Diagnostic Validity of Patient Health Questionnaire-9 and Composite International Diagnostic Interview Assessment Scales for Depression in East Africa [Internet] [Thesis]. 2013 [cited 2023 Apr 18]. Available from: https://digital.lib.washington.edu:443/researchworks/handle/1773/22822

70. Spitzer RL, Kroenke K, Williams JBW, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. Arch Intern Med. 2006 May 22;166(10):1092–7.

71. Löwe B, Decker O, Müller S, Brähler E, Schellberg D, Herzog W, et al. Validation and standardization of the Generalized Anxiety Disorder Screener (GAD-7) in the general population. Med Care. 2008 Mar;46(3):266–74.

72. Gonçalves H, Soares ALG, Santos APGD, Ribeiro CG, Bierhals IO, Vieira LS, et al. Adverse childhood experiences and consumption of alcohol, tobacco and illicit drugs among adolescents of a Brazilian birth cohort. Cad Saude Publica. 2016 Nov 3;32(10):e00085815.

73. Bursac Z, Gauss CH, Williams DK, Hosmer DW. Purposeful selection of variables in logistic regression. Source Code Biol Med. 2008 Dec 16;3:17.

74. El Mhamdi S, Lemieux A, Bouanene I, Ben Salah A, Nakajima M, Ben Salem K, et al. Gender differences in adverse childhood experiences, collective violence, and the risk for addictive behaviors among university students in Tunisia. Preventive Medicine. 2017 Jun 1;99:99–104.

75. Zhang J, Tang B wen, Liu M wei, Yuan S, Yu H jie, Zhang R, et al. Association of Adverse Childhood Experiences with Health Risk Behaviors Among College Students in Zambia. IntJ Behav Med. 2020 Aug 1;27(4):400–5.

76. Tran QA, Dunne MP, Vo TV, Luu NH. Adverse Childhood Experiences and the Health of University Students in Eight Provinces of Vietnam. Asia Pac J Public Health. 2015 Nov;27(8 Suppl):26S-32S.

77. Kim YH. Associations of adverse childhood experiences with depression and alcohol abuse among Korean college students. Child Abuse & Neglect. 2017 May 1;67:338–48.

78. Dube SR, Anda RF, Felitti VJ, Chapman DP, Williamson DF, Giles WH. Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: findings from the Adverse Childhood Experiences Study. JAMA. 2001 Dec 26;286(24):3089–96.

79. Cohen JR, Menon SV, Shorey RC, Le VD, Temple JR. The distal consequences of physical and emotional neglect in emerging adults: A person-centered, multi-wave, longitudinal study. Child Abuse & Neglect. 2017 Jan 1;63:151–61.

80. Salokangas RKR, Schultze-Lutter F, Schmidt SJ, Pesonen H, Luutonen S, Patterson P, et al. Childhood physical abuse and emotional neglect are specifically associated with adult mental disorders. Journal of Mental Health. 2020 Jul 3;29(4):376–84.

81. Grummitt LR, Kelly EV, Barrett EL, Lawler S, Prior K, Stapinski LA, et al. Associations of childhood emotional and physical neglect with mental health and substance use in young adults. Aust N Z J Psychiatry. 2022 Apr 1;56(4):365–75.

82. Chen LP, Murad MH, Paras ML, Colbenson KM, Sattler AL, Goranson EN, et al. Sexual Abuse and Lifetime Diagnosis of Psychiatric Disorders: Systematic Review and Meta-analysis. Mayo Clinic Proceedings. 2010 Jul 1;85(7):618–29.

83. Ma Y. Prevalence of Childhood Sexual Abuse in China: A Meta-Analysis. J Child Sex Abus. 2018;27(2):107–21.

84. Ferragut M, Ortiz-Tallo M, Blanca MJ. Prevalence of Child Sexual Abuse in Spain: A Representative Sample Study. J Interpers Violence. 2022 Nov;37(21–22):NP19358–77.

85. Rumble L, Mungate T, Chigiji H, Salama P, Nolan A, Sammon E, et al. Childhood sexual violence in Zimbabwe: evidence for the epidemic against girls. Child Abuse Negl. 2015 Aug;46:60–6.

86. Jewkes RK, Dunkle K, Nduna M, Jama PN, Puren A. Associations between childhood adversity and depression, substance abuse and HIV and HSV2 incident infections in rural South African youth. Child Abuse & Neglect. 2010 Nov 1;34(11):833–41.

87. Karatekin C. Adverse Childhood Experiences (ACEs), Stress and Mental Health in College Students. Stress and Health. 2018;34(1):36–45.

88. Glowa PT, Olson AL, Johnson DJ. Screening for Adverse Childhood Experiences in a Family Medicine Setting: A Feasibility Study. J Am Board Fam Med. 2016;29(3):303–7.

89. Rariden C, SmithBattle L, Yoo JH, Cibulka N, Loman D. Screening for Adverse Childhood Experiences: Literature Review and Practice Implications. J Nurse Pract. 2021 Jan;17(1):98–104.

11. Annex

11.1. Annex I: Information Sheet and Consent Form

I am Yishak Gezahegn a postgraduate student at Addis Ababa University, Department of Psychiatry. Currently I am doing a cross-sectional study on “Adverse Childhood Experiences and their Association with Depression and Anxiety Among Addis Ababa University Undergraduate Students College of Health Sciences”

This study is part of requirement for Specialty Certificate in Psychiatry.

Thank you for taking time to participate in this research. You are being asked to participate in a research study. This form provides you with information about the study. Your participation is entirely voluntary, and you can refuse to participate without penalty or loss of benefits to which you are otherwise entitled.

Principal Investigators

Yishak Gezahegn (Final Year Psychiatry Resident)

Benyam Worku (Associate Professor of Psychiatry)

Clare Pain (Professor of Psychiatry)

Purpose of the Study: The study will help understand how prevalent adverse childhood experiences are and their association with depression and anxiety among AAU undergraduate College of Health Science students. It will also help as a guide for future studies and for planning an intervention regarding the mental health of college students.

Procedure: The questionnaire will is divided into five sections and has approximately 60 questions. It won’t take more than 20 minutes to fill out the questionnaire.

Risk/Discomfort: Some of these questions may be of a personal or sensitive nature. Hence, you may experience some discomfort. If you wish to discuss any risks you may experience, you may call the Principal Investigator listed below.

Privacy and Confidentiality: In order to protect your confidentiality, no identifying information will be requested of you. Hence, none of the information you will provide can be linked to you in any manner. If the results of this research are published or presented at scientific meetings, your identity will not be disclosed.

The information you provide may be used to improve the well-being of students on university campuses. You will be also aiding the researcher in completing the requirements for his specialty training.

Dear participant, now that you've read about the study and know why it's being done, I'd like to ask for your consent to take part in it.

Contact the primary investigator below if:

- you have any questions or you need any information
- you feel distressed at any time while filling the survey you can contact the primary investigator below.
- over the past two weeks you have been feeling depressed, down or hopeless Or little interest in doing things for most of the day, nearly every day
- over the past two weeks you have been feeling nervous, anxious or on edge Or not being able to stop or control worrying,

Person to contact: Dr. Yishak Gezahegn (Primary Investigator)

Mobile: +251-910-44-67-97

Email: yisugezu74@gmail.com

11.2.Annex II: Questionnaire

Part 1: Socio-Demographic Information

1. Age _____
2. Sex _____
3. Marital status
   A) Single B) Married C) Divorced D) Widowed
4. Department
   A) Anesthesia B) Dental Medicine C) Medicine D) MRT
   E) Nursing F) Midwifery G) Laboratory H)) School of Pharmacy
5. Academic Year
   A) 1st B) 2nd C) 3rd D) 4th E) 5th F) 6th
6. Academic Performance
   A) Very poor B) Poor C) Good D) Very good E) Excellent
7. Mother's Educational Status: A) No formal education B) 1-4 C) 5-8 D) 9-12 E) College or more
8. Father's Educational Status: A) No formal education B) 1-4 C) 5-8 D) 9-12 E) College or more
9. Mother's Occupation: A) Laborer B) Merchant C) Private D) Government E) Housewife
10. Father's Occupation: A) Laborer B) Merchant C) Private D) Government
11. Growing up how much was the family size _____
12. How worried are you about your education: A) Not at all B) A little C) Very Much D) Extremely
13. How much pocket money did you get per month? A) <500 B) 500-1000 C) >1000
14. Have you had any life adversity in the past 1 year?
15. Do you have any known mental illness? A) Yes B) No
16. Do you have any known medical illness? A) Yes B) No

Part 2: Substance Use

1. Have you had a drink of alcohol in the past 30 days?
2. Have you smoked a cigarette in the past 30 days?
3. Have you smoked cannabis in the past 30 days?
4. Have you chewed khat in the past 30 days?
5. Have you used any other substances in the past 30 days?

Part 3: Adverse Childhood Experiences- IQ

2. Relationship with Parents or Guardians		
When you were growing up, during the first 18 years of your life		
2.1	Did your parents/guardians understand your problems and worries?	Always
		Most of the time
		Sometimes
		Rarely
		Never
		Don't want to answer
2.2	Did your parents/guardians really know what you were doing with your free time when you were not at school or work?	Always
		Most of the time
		Sometimes
		Rarely
		Never
		Don't want to answer
3.1	How often did your parents/guardians not give you enough food even when they could easily have done so?	Many times
		A few times
		Once
		Never
		Don't want to answer
3.2	Were your parents/guardians too drunk or intoxicated by drugs to take care of you?	Many times
		A few times
		Once
		Never
		Don't want to answer
3.3	How often did your parents/guardians not send you to school even when it was available?	Many times
		A few times
		Once
		Never
		Don't want to answer

4. Family Environment		
When you were growing up, during the first 18 years of your life		
4.1	Did you live with a household member who was a problem drinker or alcoholic, or misused street or prescription drugs?	Yes
		No
		Don't want to answer
4.2	Did you live with a household member who was depressed, mentally ill or suicidal?	Yes
		No
		Don't want to answer
4.3	Did you live with a household member who was ever sent to jail or prison?	Yes
		No
		Don't want to answer
4.4	Were your parents ever separated or divorced?	Yes
		No
		Don't want to answer
4.5	Did your mother, father or guardian die?	Yes
		No
		Don't want to answer
These next questions are about certain things you may actually have heard or seen IN YOUR HOME. These are things that may have been done to another household member but not necessarily to you.		
4.6		Many times

	Did you see or hear a parent or household member in your home being yelled at, screamed at, sworn at, insulted or humiliated?	A few times
		Once
		Never
		Don't want to answer
4.7	Did you see or hear a parent or household member in your home being slapped, kicked, punched or beaten up?	Many times
		A few times
		Once
		Never
		Don't want to answer
4.8	Did you see or hear a parent or household member in your home being hit or cut with an object, such as a stick (or cane), bottle, club, knife, whip etc.?	Many times
		A few times
		Once
		Never
		Don't want to answer

These next questions are about certain things YOU may have experienced. When you were growing up, during the first 18 years of your life . . .		
5.1	Did a parent, guardian or other household member yell, scream or swear at you, insult or humiliate you?	Many times
		A few times
		Once
		Never
		Don't want to answer
5.2	Did a parent, guardian or other household member threaten to, or actually, abandon you or throw you out of the house?	Many times
		A few times
		Once
		Never
		Don't want to answer
5.3	Did a parent, guardian or other household member spank, slap, kick, punch or beat you up?	Many times
		A few times
		Once
		Never
		Don't want to answer
5.4	Did a parent, guardian or other household member hit or cut you with an object, such as a stick (or cane), bottle, club, knife, whip etc?	Many times
		A few times
		Once
		Never
		Don't want to answer
5.5	Did someone touch or fondle you in a sexual way when you did not want them to?	Many times
		A few times
		Once
		Never
		Don't want to answer
5.6	Did someone make you touch their body in a sexual way when you did not want them to?	Many times
		A few times
		Once
		Never
		Don't want to answer
5.7	Did someone attempt oral, anal, or vaginal intercourse with you when you did not want them to?	Many times
		A few times
		Once
		Never

		Don't want to answer
5.8	Did someone actually have oral, anal, or vaginal intercourse with you when you did not want them to?	Many times
		A few times
		Once
		Never
		Don't want to answer

17. PEER VIOLENCE		
These next questions are about BEING BULLIED when you were growing up. Bullying is when a young person or group of young people say or do bad and unpleasant things to another young person. It is also bullying when a young person is teased a lot in an unpleasant way or when a young person is left out of things on purpose. It is not bullying when two young people of about the same strength or power argue or fight or when teasing is done in a friendly and fun way. **When you were growing up, during the first 18 years of your life . . .**		
6.1	How often were you bullied?	Many times
		A few times
		Once
		Never
		Don't want to answer
6.2	How were you bullied most often?	I was hit, kicked, pushed, shoved around, or locked indoors
		I was made fun of because of my race, nationality or color
		I was made fun of because of my religion
		I was made fun of with sexual jokes, comments, or gestures
		I was left out of activities on purpose or completely ignored
		I was made fun of because of how my body or face looked
		I was bullied in some other way
		Don't want to answer
This next question is about PHYSICAL FIGHTS. A physical fight occurs when two young people of about the same strength or power choose to fight each other. **When you were growing up, during the first 18 years of your life . . .**		
6.3	How often were you in a physical fight?	Many times
		A few times
		Once
		Never
		Don't want to answer

18. WITNESSING COMMUNITY VIOLENCE		
These next questions are about how often, when you were a child, YOU may have seen or heard certain things in your NEIGHBOURHOOD OR COMMUNITY (not in your home or on TV, movies, or the radio). **When you were growing up, during the first 18 years of your life . . .**		
7.1	Did you see or hear someone being beaten up in real life?	Many times
		A few times
		Once
		Never
		Don't want to answer
7.2	Did you see or hear someone being stabbed or shot in real life?	Many times
		A few times
		Once
		Never
		Don't want to answer
7.3	Did you see or hear someone being threatened with a knife or gun in real life?	Many times
		A few times
		Once
		Never
		Don't want to answer

19. EXPOSURE TO WAR/COLLECTIVE VIOLENCE		
These questions are about whether YOU did or did not experience any of the following events when you were a child. The events are all to do with collective violence, including wars, terrorism, political or ethnic conflicts, genocide, repression, disappearances, torture and organized violent crime such as banditry and gang warfare. **When you were growing up, during the first 18 years of your life . . .**		
8.1	Were you forced to go and live in another place due to any of these events?	Many times
		A few times
		Once
		Never
		Don't want to answer
8.2	Did you experience the deliberate destruction of your home due to any of these events?	Many times
		A few times
		Once
		Never
		Don't want to answer
8.3	Were you beaten up by soldiers, police, militia, or gangs?	Many times
		A few times
		Once
		Never
		Don't want to answer
8.4	Was a family member or friend killed or beaten up by soldiers, police, militia, or gangs?	Many times
		A few times
		Once
		Never
		Don't want to answer

Part 5: Patient Health Questionnaire 9 (PHQ 9)

Over the last 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days/ wk	More than half days	Almost every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
• Feeling bad about yourself or that you are a failure or have let yourself or your family down	0	1	2	3
• Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
• Moving or speaking so slowly that other people could have noticed. Or the opposite being so figety or restless that you have been moving around a lot more than usual	0	1	2	3
• Thoughts that you would be better off dead, or of hurting yourself	0	1	2	3

- If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?
  A. Not difficult at all
  B. Somewhat difficult
  C. Very difficult
  D. Extremely difficult

Part 6: Generalized Anxiety Disorder 7 (GAD 7)

Over the last 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days/wk	More than half days	Almost every day
Feeling nervous, anxious or on edge	0	1	2	3
Not being able to stop or control worrying	0	1	2	3
Worrying too much about different things	0	1	2	3
Trouble relaxing	0	1	2	3
Being so restless that it is hard to sit still	0	1	2	3
Becoming easily annoyed or irritable	0	1	2	3
Feeling afraid as if something awful might happen	0	1	2	3