ARSI UNIVERSITY

COLLEGE OF HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

Depression Burden and Determinants among Middle-Adolescent Students in Asella, Ethiopia: A Cross-Sectional Study 2025

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Abstract

Introduction: Depression is a growing public health concern among adolescents worldwide, affecting nearly 10-20% globally. In low- and middle-income countries for the majority of adolescents mental illnesses go undetected and untreated due to limited mental health services. In Ethiopia, evidence on adolescent—in particular depression —remains scarce. Generating local data is important for designing tailored interventions.

Objective: To assess the magnitude of depression and its associated factors among middle adolescent students in three selected schools in Asella, Oromia, Ethiopia in 2025.

Methods: A school-based cross-sectional study was conducted from May 9th, 2025, to January 5th, 2026, among 590 students from three selected schools in Asella town, Oromia Regional State, Ethiopia. Students were selected by a multi staged stratified sampling technique based on grade and sex. Data were collected using a structured, self-administered questionnaire prepared in English, Amharic and Afaan Oromoo and analyzed in Statistical Package for Social Sciences (SPSS) version 29 using descriptive statistics and binary logistic regression. Statistical significance was set at p-value <0.05.

Results: The magnitude of depression among middle adolescents was **30.5%.**

Significant determinants included academic pressure (AOR = 2.45, 95% CI: 1.41,4.26, very highly significant at $p < 0.001$), social-exclusion bullying (AOR = 2.64, 95% CI: 1.4,4.73, very highly significant at $p < 0.001$), living with mother only (AOR = 1.87, 95% CI: 1.10,3.16, highly significant at $p < 0.05$) or living alone (AOR = 2.61, 95% CI: 1.08,6.34, significant at $p < 0.05$), lower maternal education (AOR = 2.17, 95% CI: 1.02,4.63, significant at $p < 0.05$), and perceiving the school environment as stressful (AOR = 1.81, 95% CI: 1.09,3.03, highly significant at $p < 0.05$).

Conclusion and Recommendation: The magnitude of depression was 30.5%, with key determinants including academic pressure, social-exclusion bullying, living with mother only or living alone, lower maternal education, and a stressful school environment. Schools should integrate mental-health promotion programs and peer-support, parents should provide supportive homes, and the health and education sectors must implement

routine screening and early interventions. Longitudinal studies are recommended to clarify causal pathways.

Key Words: Mental health, Middle Adolescent, Depression.

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List of abbreviations

AOR……..….Adjusted Odds Ratio
ART……..…….……AntiRetro viral Treatment
CI…….Confidence Interval
COR……...Crudes Odds Ratio
DALYS...……...…….Disability Life Adjusted Years
HIV……..Human Immunodeficiency Virus
NCS-A.....…...National Comorbidity Survey Adolescents Supplement
OR…….…….Odds Ratio
PHQ- 9…….…..… Patient Health Questionnaire- 9
SPSS…….Statistical Package for Social Science
WHO…… World Health Organization
YLDs……..……Years Lived With Disability

1. Introduction

1.1. Background

Mental health is defined as a person's emotional, psychological, and social well-being, affecting how individuals think, feel, and act. It also influences how they handle stress, relate to others, and make choices. Mental health is crucial at every stage of life, from childhood and adolescence through adulthood (1).

Depression is a common mental disorder, with persistent sadness and a loss of interest in activities that you normally enjoy, accompanied by an inability to carry out daily activities, for at least two weeks (2). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), adolescent depression includes symptoms such as fatigue, changes in appetite, poor concentration, and suicidal thoughts (3).

Adolescents are individuals aged 10-19 years who have been estimated to be about 1.3 billion people which constituted 18% of the global populations. Middle adolescence is the age between 14 to 17 years (4). Mental health issues such as depression are significant concerns in adolescent populations globally, affecting academic performance, social development, and overall well-being. Adolescence, a period of significant emotional, psychological, and physical changes, is considered a critical developmental stage where mental health disorders may first emerge (5).

Adolescents suffer from psycho-social problems at one time or the other during their development. Most of these problems are transient and often go unnoticed. They may be considered deliberately willful. Social exclusion, punishments, and criticism may result in lowered self-esteem in adolescents. A mistaken and inappropriate understanding of mental disorders can also result in children and adolescents being deprived of the assistance they need (6).

Good mental health is needed for adolescents in building normal emotional and mental development, and to develop their potential in fulfilling relationships with peers and families in order to be able to deal with the challenges of the future (4).

1.2. Statement of the problem

Depression is the greatest concern for mental health conditions among students and it is the second- most common cause of death among people between the ages of 15 and 34, which includes the majority age of students. Due to developmental and academic

demands, secondary school students are more susceptible than ever to social and psychological problems. This stressful time is usually when several mental problems are most likely to develop and frequently continue into adulthood and increase the chance of developing additional mental health problems (7).

Furthermore, a study in the United states of America that employed the National Comorbidity Survey Adolescents Supplement (NCS-A) data discovered that about 11% of adolescents possess depression disorder before reaching the age of 18 years old. As such, this had a serious impact on the socialization, family relations, and performance at school of these categories of individuals, which could further result in a fatal situation (8).

Recent events have also shown that depression in adolescents poses a greater risk of frequent hospitalizations, recurrent depressive episodes, psycho-social impairment, alcohol abuse, drug abuse, violence and antisocial behavior as they grow up. Prospectively, it will contribute to the negative attributes in adolescents, such as weakened interpersonal relationships, impairment in the overall function, teenage pregnancy and increased physical problems even after being recovered from such mental disorders (5).

Nowadays, major depression disorder in adolescents has become a major cause in leading to the common suicidal behavior exhibit by this set of people (9). Adolescents who are affected with depression in the early stage of life often suffer throughout their lifetime. This is because early depression in one's life predicts more severe depression during adulthood as seen in many cases (10).

Between 10% and 20% of adolescents experience a mental health condition. Mental Health conditions account for 5% of disability life adjusted years(DALYS) and are reported to be the leading cause of years lived with disability (YLDs), accounting for a quarter of all YLDs among adolescents 10 to 19 years of age which includes middle adolescent age group (11). Depression if not addressed, greatly affects school attendance and performance. It also causes social withdrawal which exacerbates loneliness. In its severe form, depression may result in to comorbidity, suicide, and increased drug and

substance abuse. There is a need to establish the risks for this disease that is increasingly affecting adolescents (6).

The burden of adolescent mental health problems is growing globally. According to WHO, approximately 10–20% of adolescents experience mental health conditions, yet most cases are undetected and untreated (4). Depression is one of the leading causes of illness and disability among adolescents, while suicide is the fourth leading cause of death in 14–17 year-olds (4).

Despite adolescents making up approximately 23% of the population in sub-Saharan Africa, available information on the prevalence of mental health problems is limited. Studies conducted in East Africa, including Kenya, Uganda, and Tanzania, reveal significant levels of depression and anxiety among school-going adolescents, often linked to poverty, violence, and lack of parental support (12).

In Ethiopia, the adolescent population constitutes a significant portion of the population, yet few studies have comprehensively addressed mental health in this demographic. Where available, data indicate a rising prevalence of depressive symptoms, particularly among female students and those exposed to adverse childhood experiences (13).

Adolescents in Asella Town, located in Oromia, Ethiopia, may experience a combination of academic stress, familial expectations, socioeconomic challenges, and peer pressures, all of which could contribute to the development of mental health issues such as depression, anxiety, and stress. Despite these potential risk factors, there is a lack of comprehensive studies examining the magnitude and associated factors of mental health disorders in adolescents attending schools in the region. The lack of localized data on the magnitude of mental health problems makes it difficult to design targeted interventions or policies aimed at addressing the psychological well-being of young people in this area. This research seeks to address this gap by exploring the extent of depression among adolescent students in Asella Town and identifying the socio-demographic, academic, and environmental factors that may be contributing to these conditions.

1.3. Significance of the study

The findings of this study will provide critical insights into the mental health challenges faced by adolescents in Asella Town, Oromia. By examining the magnitude of depression and identifying the associated factors, the research will inform the development of evidence-based interventions and mental health programs specifically tailored to the needs of adolescents in this region. Additionally, the study will contribute to the limited body of research on adolescent mental health in Ethiopia, offering valuable information that can be used by policymakers, educators, and health professionals to promote mental well-being among adolescents. Ultimately, this study aims to raise awareness about adolescent mental health, reduce stigma, and encourage the implementation of appropriate mental health services to support young people during this critical developmental phase.

2. Literature Review

Mental health issues such as depression are significant concerns in adolescent populations globally, affecting academic performance, social development, and overall well-being. Adolescence, a period of significant emotional, psychological, and physical changes, is considered a critical developmental stage where mental health disorders may first emerge. In Ethiopia, mental health issues among adolescents are increasingly recognized as a public health concern, yet research on the magnitude of depression and their associated factors in adolescent populations remains limited, especially in smaller towns like Asella. This literature review aims to explore existing studies on the magnitude of depression among adolescents, with the associated factors influencing these conditions.

2.1. Magnitude of depression

Adolescence is a critical period for the emergence of mental health disorders, including depression. The World Health Organization estimates that 10–20% of adolescents globally experience mental health conditions, with depression ranked as the leading cause of illness and disability among youth aged 10–19. Suicide is now the fourth leading cause of death among adolescents aged 15–19 worldwide (4).

A global meta-analysis reviewed studies on child and adolescent mental disorders and found that approximately 13.4% of youth worldwide suffer from a mental disorder, with depressive disorders comprising the majority of cases (12). Another meta-analysis also emphasized that children and adolescents with chronic physical illnesses are at a significantly higher risk of developing depression (13).

These studies highlight that adolescent mental health is a public health priority in both high- and low-income settings. However, disparities in prevalence, reporting, and treatment persist due to variation in methodology, cultural stigma, and access to health care systems.

Standardized tools such as the Patient Health Questionnaire-9 (PHQ-9) are widely used for screening adolescent depression. It has been validated in various cultural contexts, including low-income settings (14,15).

A study done in India showed, 3-9% of teenagers meet the criteria for depression at any one time, and at the end of adolescence, as many as 20% of teenagers report a lifetime prevalence of depression. Economic difficulty, physical punishment at school, teasing at school and parental fights were significantly associated with depression (16).

Another cross-sectional study in Nepal found a high prevalence of depression among high school students, with more than two-fifths (44.2%) of students having depression (7). In similar vein, findings from a study in Bangladesh found that the prevalence rates of moderate to severe levels of depression was 26.5% (17).

A study from Malaysia also discovered that the prevalence of mild, moderate and severe depression was 16.6%, 12.8% and 3.8% respectively (18). A similar study in Delhi found prevalence of depression among school going adolescents to be 47.9% (19). A study in Saudi Arabia also revealed prevalence rates of depression to be 30.8% among secondary school students (20).

There are several studies done in Africa countries. One study on Kenyan high school students showed high levels of depression symptoms (45.90% above clinical cutoff) (21). A study in the Western Cape Province of South Africa also showed out of the 621 adolescents, 33.5% reported experiencing symptoms of depression (22).

In Central Uganda, 21 % had significant depression symptoms of which 3.1% reported current suicidal ideation (23). A similar study in a rural district in southwest Nigeria, the prevalence of depression was 21.2% (24).

Few studies have also been conducted in Ethiopia. Adolescents constitute over 30% of the Ethiopian population, with those in the 14–17 age group estimated to be approximately 8–9 million (25). Despite their large size, this group remains underserved in terms of mental health services.

A cross-sectional study done in Jimma town, Southwest Ethiopia, concluded the prevalence of depression to be 28% (26). Likewise, a study done in Afar regional state, showed the magnitude of depression to be 28.91% (27). Another cross sectional study on depression in Aksum Town, Tigray, found the prevalence of depressive symptoms to be

19.7% (28). A school based cross sectional study in governmental preparatory schools in Addis Ababa, also found out the prevalence of depression to be 29.29% (29).

A study among orphan adolescents in Addis Ababa, showed the overall prevalence of depression to be 36.4% (30). Similarly in Ilu Abba Bor Zone, South West Ethiopia, overall prevalence of depression among orphan children in orphanages was 24.1% (31).

2.2. Factors associated with depression

Numerous studies have explored the factors contributing to depression among adolescents, identifying a broad range of sociodemographic, psychological, academic, and environmental variables.

A cross-sectional study conducted in Nepal found that adolescents with low perceived social support, inability to share personal problems, and low self-esteem were at significantly higher odds of being depressed. Students who had low perceived social support did not share their problems with anyone and had low self-esteem were at higher odds of being depressed (7).

Similarly, research from Bangladesh identified that academic difficulties, physical punishment, and peer-related issues were major contributors to depressive symptoms (17).

Another study from Malaysia revealed that economic hardship, peer conflict, and academic pressure were significant factors influencing depression severity (18).

A finding from a cross sectional study in Delhi noted that depression were more common among female students, late adolescent age group, students alone/ away from family, students from separated/ single parents, consuming alcohol and family pressure to perform well in school (19).

A similar study in Saudi Arabia revealed students who were bullied in the last 30 days had significantly higher depression scores than those who were not bullied. Participants who experienced physical assault in the last 12 months had significantly higher depression scores than those who did not. Participants who had had fights in the last 12 months had significantly higher depression scores than those who did not. Participants

who felt unsafe on the way to school had significantly higher depression scores than those who did not (20).

Kenyan older adolescents reported higher depression symptoms, as well as lower social support than younger adolescents (21). In another study in the Western Cape Province of South Africa, being in a higher grade in school, any lifetime alcohol use, other drug use, and witnessing violence among adults at home were significantly associated with experiencing depressive symptoms (22).

In Central Uganda, significant depression symptoms were associated with single-sex schools, loss of parents and alcohol consumption (23). While a rural district in southwest Nigeria showed significant predictors for depression including not living with parents, not participating in sports, a large number of siblings, and a change in place of residence (24).

In Ethiopia, multiple studies have confirmed consistent factors associated with adolescent depression.

A study done in Jimma Town identified rural residence, being in a higher grade, low social support, and exposure to adverse childhood experiences as independent predictors of depression (26). Another study in Afar regional state, Ethiopia, showed not having good relationship with classmates, alcohol consumption, being in higher grade and suicidal ideation increase common mental illnesses (27). Also, a study on depression and its association with parental neglect among adolescents at governmental high schools of Aksum Town, Tigray, found that depressive symptoms were significantly associated with female sex, having known medical conditions, poor social support, childhood abuse and neglect, and occupation of mother (28).

Among orphaned adolescents in Addis Ababa and Ilu Abba Bor Zone, community discrimination, lack of visitors, and long stays in institutions were strongly associated with higher rates of depression (30,31).

From all the literature reviewed for this study, Magnitude of depression among adolescents is significant and affects the majority of the community. These findings also reinforce the multifactorial nature of adolescent depression. Socioeconomic status, family

structure, school-related stress, peer relationships, and exposure to trauma or neglect are consistently reported as strong predictors. Although there is geographical difference on findings, studies are still limited in our setup, Asella, to show the burden and determinant factors of depression among middle adolescent students. This study aims to address this gap and create opportunities for policy makers in the education and health system to improve this gap.

2.2.1. Conceptual framework

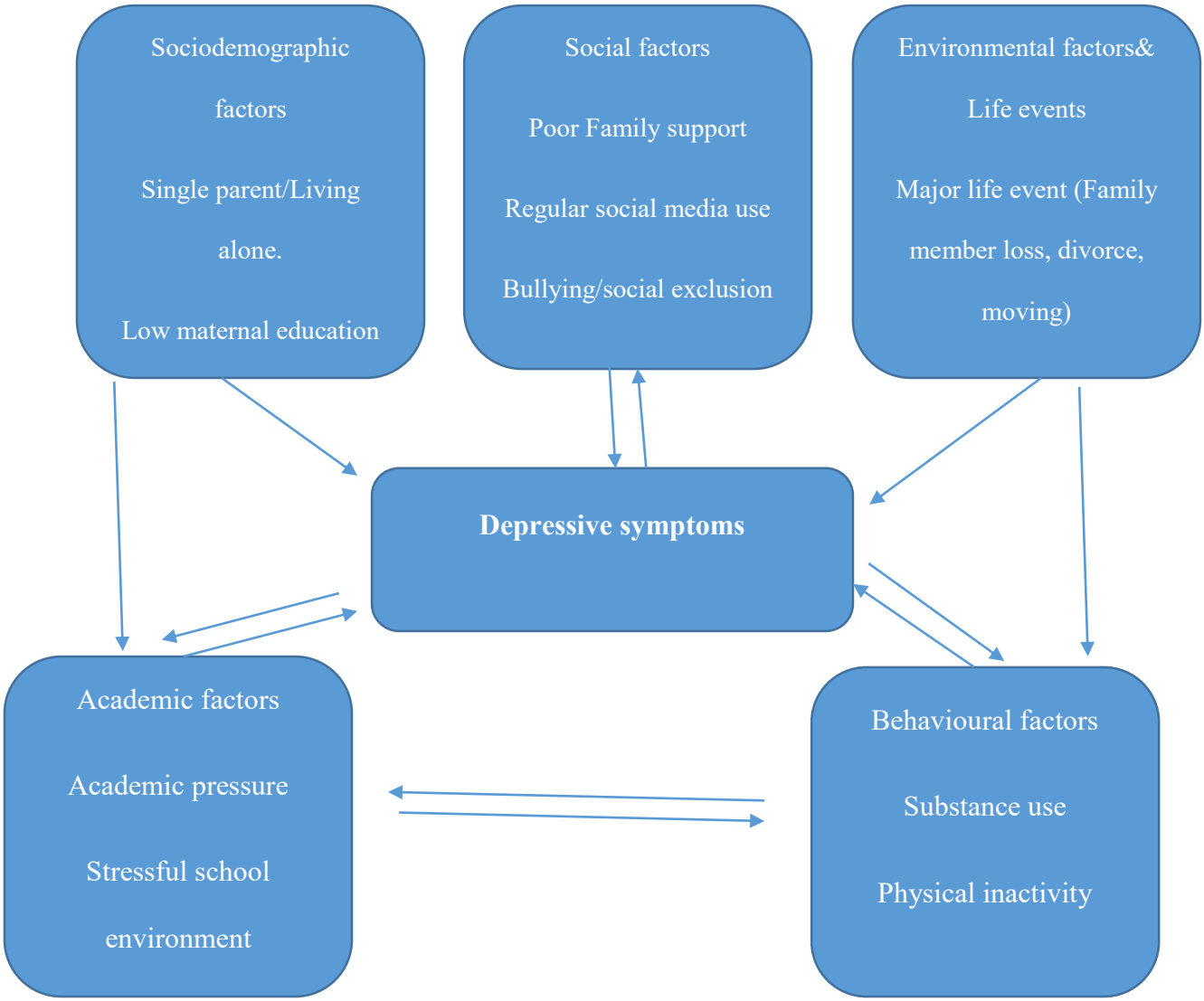

Figure 1: Conceptual framework showing independent variables and their influence on depressive outcomes, Asella -Ethiopia 2025 (26).

3. Objectives

3.1. General Objective

- To assess the magnitude of depression and associated factors among middle adolescent students enrolled in primary and secondary schools in Asella, Oromia, Ethiopia, in September 2025.

3.2. Specific Objectives

- To determine the magnitude of depression among middle adolescent students in Asella during September 2025.
- To identify factors associated with depression among middle adolescent students in Asella during September 2025.

4. Method

4.1. Study area

The study was conducted in Asella city of Oromia region, Ethiopia, which is located 175 km south east from the capital city. The mid 2022 estimate produced a total of 139,537 inhabitants, of whom 69,459 are male and 70,078 are female (32).

According to data obtained from the Asella Education Bureau, the town maintains a total of **46 schools**, comprising 32 primary schools and **14 secondary schools**. These secondary schools are distributed by ownership: 10 are government-owned, 2 are private, and 2 are non-governmental.

In the 2024/25 academic year, three specific secondary schools—Asella Secondary School No. 1 (Kebele 10), Marvel School (Kebele 07), and St. Gabriel School (Kebele 07)—enrolled a combined total of **4,236 students**, who are predominantly within the middle adolescent age group. Specifically, Asella Secondary School No. 1 enrolled 2,568 students, Marvel School had 990 students, and St. Gabriel School accounted for 678 students.

For the purpose of this study, these three schools were strategically selected to ensure adequate representation across diverse student demographics, varying school types, and different socio-economic backgrounds.

4.2. Study design and period

A school based descriptive cross-sectional study was conducted in the month of September and October 2025.

4.3. Source and study population

4.3.1. Source population

Asella Town Adolescent Students of the year 2025.

4.3.2. Study population

Sampled adolescent students aged 14-17 from Asella Secondary School no 1, St Gabriel School and Marvel School.

4.4. Sample size determination and Sampling procedure

4.4.1. Sample size determination

Sample size is calculated using a single population proportion formula considering p = 0.28 (28%)for depressive symptoms; based on multiple regional studies, 95% confidence interval, 5% margin of error, 1.5 design effects, and 10% non-response rate.

$n = Z^2.p.(1-p)/d^2$, where n=sample size

Z=Z score for the confidence level (1.96 for 95% confidence)

p= estimated prevalence (28%)

d=margin of error (0.05 for 5%)

n=309.3~310.

With finite population correction: $n_{adjusted}$= n0.N / n0+(N−1) , where $n_{adjusted}$=adjusted sample size

n=initial sample size

N= population size (4236)

n adjusted= 288.8~289.

Adjusting for Design Effect (1.5)

ndeff=nadj·DE = 289x1.5=433.5~434

Considering 10% nonresponse rate: n_{final}= $n_{adjusted}$/1-nonresponse rate = 482.2

The final sample size is 483.

In addition to estimating the magnitude of depression, this study aims to identify associated factors among middle adolescent students. Therefore, the sample size must be sufficient to support multivariable logistic regression analysis. According to the rule of thumb, a minimum of 10 events per independent variable (EPV) is required to ensure adequate model stability, reduce bias, and maintain precision of the estimated odds ratios (33).

In this study, approximately 10 independent variables are planned to be included in the multivariable model (e.g., sex, age, parental marital status, family income, social support, substance use, school type, etc.). Based on this, a minimum of 10 × 10 = 100 events (cases

of depression) are needed. Given an expected prevalence of depression of 28% among adolescents, the total required sample size is calculated as:

$n=10 \cdot k/p$

Where: k = number of predictors

P = expected proportion with depression (say 28%)

$n=100/0.28 \approx 357$

To account for the use of multistage stratified sampling, a design effect of 1.5 is applied:

$n\ design=357 \times 1.5=536$

After adjusting for a 10% non-response rate:

$n\ final=536+(536 \times 0.10)=589.6 \approx 590.$

Therefore, the final sample size required to reliably detect associations between depression and its potential risk factors using multivariable analysis is 590.

Taking the higher number from the two, we took 590 as the final sample size.

4.4.2. Sampling procedures

A stratified multistage sampling technique was utilized for participant selection. In the first stage, all secondary schools in Asella were stratified by ownership (governmental, private, and NGO-owned). One school was selected from each stratum using simple random sampling, resulting in three selected schools (one from each ownership type). In the second stage, within each selected school, students were first stratified by grade level (9–12) and then further stratified by sex (male/female) within each grade. The sampling frame was obtained from the schools' academic director offices. Finally, sample sizes were allocated proportionally based on the enrollment within each grade-sex subgroup, and the final students were selected using simple random sampling within these strata.

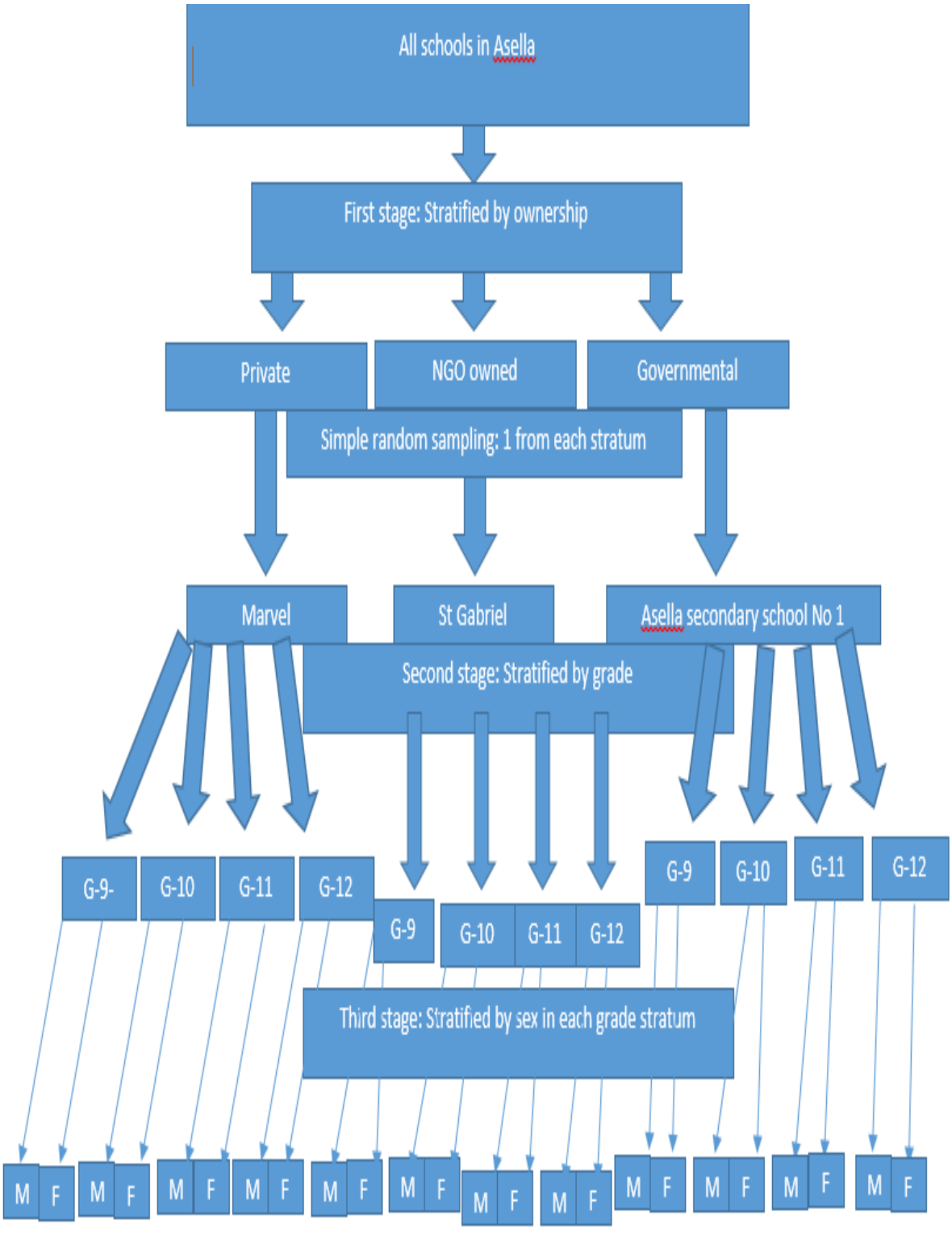

Figure 2: Schematic presentation of the sampling procedure, Asella 2025.

Inclusion criteria:-

(1) Enrolled in one of the three selected schools in Asella during 2025 academic year.

(2) Middle adolescents in Grades 9–12 (approximately 14–17 years of age).

(3) Present at school during the data collection period.

(4) Able to read and understand English, Amharic, or Afaan Oromoo.

(5) Provided assent and parental/guardian consent.

Exclusion criteria:-

1) Students attending evening schools.

2) Those with Intellectual disability are limited to provide information.

3) Adolescents who have spent less than a school term in their current school or on an excursion or inter-school programs but that will present at the time of the study will be excluded from the study.

4) Students who declined to participate even after consent/assent was obtained.

4.5. Study variables

4.5.1. Dependent variables

Depressive symptoms

4.5.2. Independent variables

Socio-demographic factors (Age, Gender, Grade level, Type of School, Family, Parental education, Household income, Siblings number).

Social factors (peer relationship, family support, and social media exposure).

Academic factors (Academic pressure, school environment and bullying at school).

Environmental & Life Events (Loss of parent or caregiver, change of residence, community discrimination).

Behavioral and Health Factors (Substance use, sleep disturbance).

4.6. Operational definitions

Depression is measured using the **Patient Health Questionnaire-9 (PHQ-9)**, a validated tool assessing depressive symptoms over the past two weeks. The PHQ-9 evaluates nine core symptom domains. Each item is scored from 0 (“not at all”) to 3 (“nearly every

day"). For this study, a **score of ≥10** is used to define clinically significant depression. Severity categories were: 0–4 minimal, 5–9 mild, 10–14 moderate, 15–19 moderately severe, and 20–27 severe (11,12).
Middle adolescent is defined as the age group between 14 and 17 years (1).

Academic pressure was defined as a student's self-reported experience of feeling overwhelmed by school workload or expectations, measured with a single item and coded as "Yes" or "No."

Family support was defined as the student's self-reported perception of receiving emotional or practical support from family members, assessed using one questionnaire item and categorized as "Yes" or "No."

Social media exposure includes using telegram, tiktok, facebook, you tube, Instagram and twitter. Regular use was defined as >4hrs per day.

Major life event was defined as the presence of at least one significant stressful incident in the past 12 months (e.g., death, parental separation, moving), measured with a single item and coded as "Yes" or "No."

Stressful school environment was defined as the student's perception that their school atmosphere is tense, unsafe, or emotionally distressing, measured using one item and categorized as "Yes" or "No."

4.7. Data collection procedures

Data was collected using a KoboCollect-based questionnaire that included the PHQ-9 for measuring depression and items on sociodemographic characteristics and potential risk factors. The tool was translated into Amharic and Afaan Oromoo, back-translated into English, and pilot-tested in a nearby school to ensure clarity, with necessary revisions made based on feedback. Four trained health-science research assistants conducted the

data collection after receiving two days of training on study procedures, ethical issues, and standardized questionnaire administration. In each selected class, the data collectors provided instructions, facilitated participant understanding, ensured completeness of responses, and were supervised to maintain data quality. Informed consent and assent were obtained prior to participation, and confidentiality was ensured using code numbers instead of names.

4.8. Data analysis procedures:

Data were exported from KoboCollect to SPSS for cleaning, coding, and analysis. Descriptive statistics were used to summarize sociodemographic characteristics, including frequencies, percentages, means, and medians. The prevalence of depression was calculated based on PHQ-9 scores using the ≥10 cut-off. Bivariate analysis was conducted to examine associations between depression and independent variables such as age, sex, grade level, family background, bullying history, academic pressure, peer relationships, and substance use. Variables with p-values <0.25 in bivariate analysis were considered for multivariable modeling. Multivariable logistic regression was applied to identify factors independently associated with depression. Adjusted odds ratios with 95% confidence intervals were used to interpret the strength and direction of associations. A p-value of <0.05 was considered statistically significant in the final model. Model fitness was assessed to ensure appropriate interpretation of results. Findings were summarized in tables and graphs for clear presentation.

4.9. Data quality assurance

The quality of the data was ensured through careful design and pretesting of the questionnaire. Data collectors and supervisors received orientation and training on proper administration of the tool and how to minimize missing or inconsistent responses. Completed questionnaires were reviewed by the investigator fo**r** completeness, consistency, and relevance before data entry.

4.10. Ethical consideration

Ethical approval was obtained from the Institutional Review Board of Arsi University, College of Health Sciences. Permission to conduct the study was also granted by the selected schools in Asella town. Written parental consent was obtained through letters sent home one week before data collection. Students provided assent after the study purpose and procedures were fully explained to them. Participation was entirely voluntary, and students were informed of their right to withdraw at any time. Confidentiality was ensured by using code numbers rather than personal identifiers. Completed questionnaires were stored securely and accessed only by the research team. Participants who showed signs of psychological distress during the assessment were referred to counseling services or mental health professionals at Asella Referral and Teaching Hospital. The study adhered to ethical principles of respect, beneficence, and justice throughout the research process. All procedures were implemented in accordance with national and institutional ethical guidelines

4.11. Dissemination plan

The study findings will be shared with Arsi Zone Health Bureau, Asella Referral and Teaching Hospital Psychiatry Department, and the participating schools, including Asella Secondary School No. 1, St. Gabriel, and Marvel School. Results will be presented to the

Department of Public Health at Arsi University and made available to researchers and policymakers for further use. After advisor and departmental approval, the thesis will be prepared for publication.

5. Results

A total of 544 adolescents were included yielding a response rate of 92.2%.

Demographic characteristics

A total of 544 middle-adolescent students participated in the study. Of these, 257 (52.8%) were male and 287 (47.2%) were female. The mean age of participants was 15.95 ± 1.00 years, with the largest proportion aged 17 years (39.9%), followed by 15 years (27.9%), 16 years (23.9%), and 14 years (8.3%).

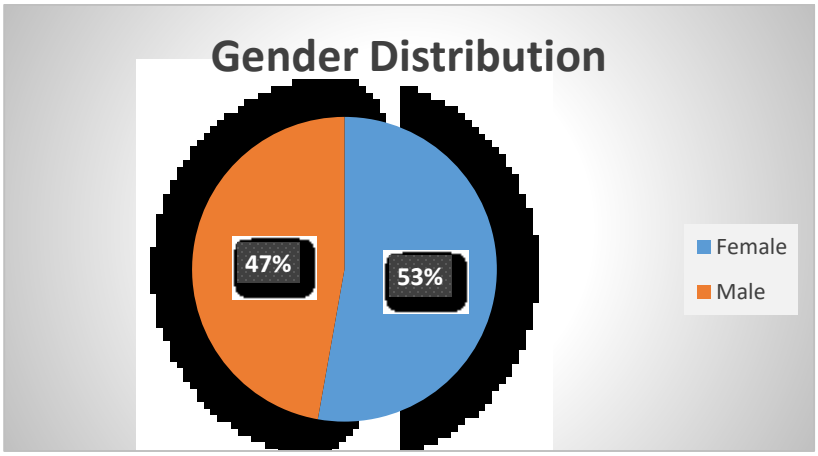

Figure 3: Figure showing Gender Distribution of middle-adolescent students in Asella, 2025.

With regard to grade level, 178 students (32.7%) were in grade 9, 120 (22.1%) in grade 10, 102 (18.8%) in grade 11, and 144 (26.5%) in grade 12. Participants were drawn from three school types: public school (Asella secondary school no 1) accounted for 310 students (57%), followed by private school (Marvel) with 142 students (26.1%), and NGO-owned school (St Gabriel) with 92 students (16.9%).

Most respondents reported living with both parents (311; 57.2%). Others lived with their mother only (117; 21.5%), father only (27; 5%), with guardians or relatives (60; 11%), or

Female	287	47.2

lived alone (29; 5.3%).

Regarding parental education, 39% of fathers had completed secondary school, and 34.2% had higher education, while 18.8% had primary education and 8.1% had no formal education. For mothers, 33.1% had primary education, 28.3% had secondary education, 20.4% had higher education, and 18.2% had no formal education.

Household income distribution indicated that 281 households (51.7%) fell within the medium-income group (10,000–50,000 birr per year), 142 (26.1%) were in the high-income category (>50,000 birr/year), and 121 (22.2%) were classified as low-income (<10,000 birr/year). For analysis, the original three-category household income variable was recoded into two groups. The low-income category (<10,000 birr/year) was retained as a separate group (121 students (22.2%)), while the medium (10,000–50,000 birr/year) and high (>50,000 birr/year) income categories were combined to form a "not low-income" group (423 students (77.8%)).

The majority of students (477; 87.7%) reported having siblings.

Table 1: Sociodemographic Characteristics of Study Populations in Asella, 2025 (N=544)

Prevalence of Depression (PHQ-9):

Variable	Response	Frequency (n)	Percent (%)
Sex	Male	257	52.8
Age in years	mean (±SD)	15.95 ± 1.004 years	
	14	45	8.3
	15	152	27.9
	16	130	23.9
	17	217	39.9
Grade Level	Grade 9	178	32.7
	Grade 10	120	22.1
	Grade 11	102	18.8
	Grade 12	144	26.5
School type	Private	142	26.1
	NGO owned	92	16.9
	Public	310	57
Family structure	Lives with both parents	311	57.2
	Lives with mother only	117	21.5
	Lives with father only	27	5
	Lives with guardians/ relatives	60	11
	Lives alone	29	5.3
Father's education level	No formal education	44	8.1
	Primary school	102	18.8
	Secondary school	212	39
	Higher education	186	34.2
Mother's education level	No formal education	99	18.2
	Primary school	180	33.1
	Secondary school	154	28.3
	Higher education	111	20.4
Household income	Not low: >10,000 birr/year	423	77.8
	Low: <10,000 birr	121	22.2
Siblings	Yes	477	87.7
	No	67	12.3

A total of **544 students** completed the PHQ-9. The **mean score was 2.12±1.04**. Based on the severity classification, the students were distributed primarily in the lower ranges: **mild depressive symptoms** (198 students, **36.4%**) and **minimal symptoms** (180 students, **33.1%**). Smaller percentages were found in the higher ranges: moderate (94; 17.3%), moderate-to-severe (65; 11.9%), and severe depression (7; 1.3%).

Based on the standard cutoff point (PHQ-9 ≥ 10), 166 students (30.5%) had depression, while 378 students (69.5%) had no depression. The prevalence of depression in this study was therefore 30.5%.

Table 2: Table showing depression Frequency, Asella 2025

Depression Status	Frequency (n)	Percentage (%)
No depression	378	69.5
Depression	166	30.5
Total	544	100

Table 3: Table showing Severity of depression, Asella 2025

Severity	Frequency (n)	Percentage (%)
Minimal	180	33.1
Mild	198	36.4
Moderate	94	17.3
Moderate–Severe	65	11.9
Severe	7	1.3
Total	544	100

A range of psychosocial, behavioral, and school-related variables were assessed to identify potential factors associated with depressive symptoms among middle adolescent students.

More than two-thirds of the students (68.2%) reported experiencing academic pressure, while 31.8% reported no academic pressure. Bullying was also prevalent, with 40.6% of the students reporting at least one form of bullying experience. Among those who were bullied, 16.5% experienced verbal bullying**,** 12.8% physical abuse, and 11.2% social exclusion.

Regarding social support, 68.5% reported feeling supported by their families, whereas 31.5% reported low family support. Additionally, 44.3% had witnessed fights among family members, indicating a considerable level of household conflict.

Concerning lifestyle behaviors, 12.3% engaged in regular physical exercise**,** 45.2% exercised occasionally, and 42.5% did not participate in any physical activity. The most common forms of exercise were walking/jogging/running (33.6%) and team sports (28%).

Social media use was widespread, with 87.5% using social media either regularly or occasionally, and only 12.5% reporting no exposure. Substance use was reported by 31.4% of the students, with alcohol being the most commonly used substance (47%), followed by khat (25.3%) and cigarettes (13.7%).

A total of 28.7% experienced at least one major life event, primarily loss of a family member (40.9%)**,** moving residence (23.2%)**,** and family divorce (22.6%)**.** Additionally, 22.4% perceived their school environment as stressful.

Table 4: Table showing associated factors frequency distribution, Asella 2025

Variable	Response	Frequency (n)	Percentage (%)
Academic pressure	Yes	371	68.2
	No	173	31.8
Bullying type	No	323	59.4
	Yes, Physical abuse	70	12.8
	Verbal	90	16.5
	Social exclusion	61	11.2
Family support	Yes	373	68.5
	No	171	31.5
Fight among family	Yes	241	44.3
	No	303	55.7
Physical exercise	Yes, Regularly	67	12.3
	Yes, Occasionally	246	45.2
	No	231	42.5
Type of exercise	Walking/ Jogging/ Running	146	33.6
	Cycling	50	11.5
	Team sports (e.g. football, basketball, volleyball)	122	28
	Individual sports (e.g. Martial arts, gym, fitness training)	98	22.5
	Other	19	4.4
Social media exposure	Yes, Regularly	178	32.7
	Yes, Occasionally	298	54.8
	No	68	12.5
Substance use	Yes	171	31.4
	No	373	68.6
Type of substance	Alcohol	141	47
	Khat	76	25.3
	Cigarettes	41	13.7
	Recreational drugs	28	9.3

	Others	14	4.7
Major life event	Yes	156	28.7
	No	388	71.3
Type of major life event	Loss of family member	67	40.9
	Family Divorce	37	22.6
	Moving	38	23.2
	Others	22	13.4
Stressful School environment	Yes	122	22.4
	No	422	77.6

Bivariate Analysis

Bivariate logistic regression analysis was conducted to examine the association between categorical varibles and depression, and expressed using Chi-Squared (χ^2) Test of Independence. Variables with p-values <0.05 were considered statistically significant.

Gender, age group, grade level, and sibling status were not significantly associated with depression. However, type of school, family structure, parental education, and household income showed significant associations, with higher depression among students from non-two-parent households, low-income families, and those with less-educated parents. Academic pressure (OR = 3.07, $p < 0.001$), bullying ($p < 0.001$), lack of family support (OR = 0.606, $p < 0.01$), low physical activity ($p < 0.05$), and substance use (OR = 2.24, $p < 0.05$) all increased depression risk. Social media exposure was also significant ($p < 0.05$), and students using social media for more than four hours daily were 1.77 times more likely to be depressed ($p < 0.05$). Experiencing major life events ($p < 0.05$) and perceiving the school environment as stressful (OR = 2.52, $p < 0.001$) were strong predictors of depression.

Table 5: Table showing bivariate association between selected factors and depression, Asella, 2025

Variable	Category Compared	COR	95% CI	p-value	Interpretation
Gender	Female vs Male	1.07	0.86–1.34	0.523	Not significant
Age group	17 vs 14–16	1.28	0.98–1.67	0.068	Not significant
Grade level	12 vs 9–11	1.29	0.97–1.70	0.080	Not significant
School type	Public vs Private	1.42	1.01–2.03	0.047	Significant
Family structure	Single parent/other vs both parents	1.84	1.40–2.43	<0.001	Strong association
Father's education	Low vs High	1.65	1.25–2.18	<0.001	Strong association
Mother's education	Low vs High	1.58	1.20–2.09	<0.001	Strong association
Household income	Low vs Not Low	1.41	1.01–1.98	0.043	Significant
Academic pressure	Yes vs No	3.07	2.16–4.36	<0.001	Very strong predictor
Bullying	Any vs None	2.01	1.34–3.01	0.001	Significant
Family support	No vs Yes	1.65	1.13–2.44	0.010	Important risk factor
Family conflict	Yes vs No	1.05	0.75–1.46	0.784	Not significant
Physical exercise	None vs Regular	1.54	1.05–2.27	0.029	Significant
Social media exposure	High vs Low	1.45	1.04–2.03	0.028	Significant
Social media hours/day	>4 hrs vs <1 hr	**1.77**	1.17–2.66	0.007	Significant
Substance use	Yes vs No	2.24	1.53–3.28	<0.01	Strong predictor

Major life event	Yes vs No	1.52	1.03–2.24	0.032	Significant
Stressful school environment	Yes vs No	2.52	1.67–3.78	<0.001	Very strong predictor

Table 6: Table showing bivariate association between selected factors and depression with COR and significancy, Asella 2025

Variable	Category Compared	COR	95% CI	p-value	Interpretation
Gender	Female vs Male	1.07	0.86, 1.34	0.523	Not significant
Age group	17 vs 14–16	1.28	0.98, 1.67	0.068	Not significant
Grade level	12 vs 9–11	1.29	0.97, 1.70	0.080	Not significant
School type	Public vs Private	1.42	1.01, 2.03	0.047	Significant
Family structure	Single parent/other vs both parents	1.84	1.40, 2.43	<0.001	Strong association
Father's education	Low vs High	1.65	1.25, 2.18	<0.001	Strong association
Mother's education	Low vs High	1.58	1.20, 2.09	<0.001	Strong association
Household income	Low vs Not Low	1.41	1.01, 1.98	0.043	Significant
Academic pressure	Yes vs No	3.07	2.16, 4.36	<0.001	Very strong predictor
Bullying	Any vs None	2.01	1.34, 3.01	0.001	Significant
Family support	No vs Yes	1.65	1.13, 2.44	0.010	Important risk factor

Family conflict	Yes vs No	1.05	0.75, 1.46	0.784	Not significant
Physical exercise	None vs Regular	1.54	1.05, 2.27	0.029	Significant
Social media exposure	High vs Low	1.45	1.04, 2.03	0.028	Significant
Social media hours/day	>4 hrs vs <1 hr	**1.77**	1.17, 2.66	0.007	Significant
Substance use	Yes vs No	2.24	1.53, 3.28	<0.01	Strong predictor
Major life event	Yes vs No	1.52	1.03, 2.24	0.032	Significant
Stressful school environment	Yes vs No	2.52	1.67, 3.78	<0.001	Very strong predictor

Although no variable showed statistically significant protective effects ($p \geq 0.05$), some variables demonstrated a decreasing trend in odds of depression.

Students who reported receiving family support were 33% less likely to have depression, though the association did not reach statistical significance (AOR = 0.67, 95% CI: 0.429, 1.056, $p < 0.085$). There was slight reduction in odds with those who witnessed fight among family (AOR = 0.68, 95% CI: 0.441, 1.056, $p < 0.086$) but it was non-significant and likely due to confounding or reporting bias. Those who are moderately active on physical exercise/outdoor activity (AOR = 0.81) and highly active (AOR = 0.68) showed lower odds for depression, but with $p > 0.05$. Also in those who had low social media

exposure findings show a mild protective tendency (AOR = 0.85, 95% CI: 0.431, 1.667) (non-significant).

These trends should not be interpreted as true protective effects but are included for completeness.

Multivariable Regression Analysis

After controlling for potential confounders in the multivariable logistic regression model, several variables remained statistically significant predictors of depression among adolescents. Academic pressure demonstrated one of the strongest associations; students who reported experiencing academic pressure were 2.45 times more likely to develop depression compared to those without such pressure (AOR = 2.45, 95% CI: 1.409, 4.257, $p < 0.001$). This result highlights the substantial emotional burden placed on students within the competitive academic environment.

Bullying, particularly social exclusion, also emerged as a powerful independent predictor of depression. Students exposed to social exclusion were 2.64 times more likely to experience depression (AOR = 2.64, 95% CI: 1.479, 4.725, $p < 0.001$). Other forms of bullying (physical or verbal) did not remain significant after adjustment, indicating that the psychological impact of social exclusion may be more detrimental than physical or verbal aggression in this age group.

Family structure was another significant predictor. Compared to adolescents living with both parents, those living with their mother only had significantly higher odds of depression (AOR = 1.87, 95% CI: 1.103, 3.156, $p < 0.05$). Similarly, adolescents living

alone showed more than a 2.6-fold increased likelihood of depression (AOR = 2.61, 95% CI: 1.075, 6.340, $p < 0.05$). These findings underline the importance of stable family environments and parental presence in supporting emotional wellbeing.

Maternal educational level also played a significant role. Students whose mothers had only primary-level education were twice as likely to develop depression (AOR = 2.17, 95% CI: 1.018, 4.631, $p < 0.05$) compared to those whose mothers attained secondary education. This suggests that higher maternal education may protect against adolescent depression, likely through better parenting practices, communication, and awareness of mental health.

Lastly, students who perceived their school environment as stressful were significantly more likely to experience depression (AOR = 1.81, 95% CI: 1.087, 3.027, $p < 0.05$). This emphasizes that the social and emotional atmosphere within schools has substantial influence on students' mental wellbeing.

Although some variables such as regular physical exercise, family support, absence of bullying, and having siblings showed trends toward being protective (AOR < 1), none reached statistical significance in the adjusted model. Hence, the final model identified academic pressure, social exclusion bullying, living with mother only, living alone, low maternal education, and stressful school environment as the independent determinants of depression.

Table 7: Table showing Determinants of Depression after multivariable regression Asella 2025

Variables	Adjusted OR (AOR)	95% CI	p-value
Academic pressure (Yes vs No)	2.45	1.409, 4.257	0.001
Bullying — social exclusion (vs none)	2.64	1.479, 4.725	0.001
Family structure — living with mother only (vs both parents)	1.87	1.103, 3.156	0.020
Family structure — living alone (vs both parents)	2.61	1.075, 6.340	0.034
Mother's education — primary (vs secondary)	2.17	1.018, 4.631	0.045
Perceive school environment stressful (Yes vs No)	1.81	1.087, 3.027	0.023
Age (per year)	1.33	0.954, 1.859	0.093
Gender (male vs female)	0.77	0.490, 1.197	0.242
Type of bullying — physical	1.47	0.789, 2.752	0.224
Type of bullying — verbal	1.52	0.764, 3.001	0.234
Family support (No vs Yes)	0.67	0.429, 1.056	0.085
Witnessed family fight (No vs Yes)	0.68	0.441, 1.056	0.086
Social media exposure (occasionally vs none)	1.49	0.699, 2.880	0.333
Social media exposure (regularly vs none)	0.85	0.431, 1.667	0.632

6. Discussion

This school-based cross-sectional study in Asella town identified a high prevalence of clinically significant depressive symptoms (30.5%). This aligns with comparable Ethiopian studies reporting similar burdens among adolescents in Jimma (≈28%) (26), Afar (≈28.9%) (27), and Addis Ababa (≈29%) (29), as well as findings from other LMICs where prevalence commonly ranges from 20–40% depending on context and measurement tools (12,17,21). The use of the PHQ-9, validated in East African settings, strengthens confidence in the reliability and comparability of the estimate (14,15).

Multivariable analysis revealed that the most influential factors associated with depression were school-based and family-level psychosocial stressors. This overall pattern aligns strongly with the wider literature showing that adolescents' mental health is shaped primarily by pressures within their immediate academic and family environments. The findings highlight that both structural and relational stressors contribute to elevated depressive symptoms in this population.

Academic pressure emerged as the strongest independent predictor (AOR ≈ 2.45), mirroring results from Ethiopia and multiple Asian countries where heavy academic demands and competitive examination systems heighten risks of internalizing disorders (7,17–19,26,27). Ethiopian students similarly face high-stakes national examinations that create sustained pressure and fear of failure. These demands, therefore, represent a prominent and modifiable risk factor for depressive symptoms.

Mechanistically, academic pressure disrupts sleep, reduces leisure and social interactions, increases rumination, and intensifies perceived failure—all pathways repeatedly linked to depressive symptoms (11,12). This reinforces the need for interventions that teach study skills, promote balanced academic schedules, and provide stress-management training within schools. Supporting students to manage academic expectations may have substantial impact on mental-health outcomes.

Bullying also showed a significant association with depression, with social-exclusion (relational) bullying demonstrating the strongest independent effect (AOR ≈ 2.64). This

aligns with international evidence showing relational victimization as particularly harmful because it undermines adolescents' sense of belonging and emotional security (20–22). Cultural norms in Ethiopian schools, where group belonging is socially important, may intensify the impact of exclusion.

Comparative evidence from Saudi Arabia, South Africa, Nepal, and Bangladesh similarly identifies peer conflict and victimization as critical correlates of adolescent psychological distress (7,17,20,22). The current study extends this evidence by highlighting relational exclusion specifically, which may reflect contextual peer-group dynamics unique to the setting. These findings underscore the importance of addressing subtle forms of bullying—not only physical aggression—in school mental-health programs.

Family instability also played a significant role in depression risk. Adolescents living with mother only (AOR ≈ 1.87) or living alone (AOR ≈ 2.61) were more vulnerable, reflecting evidence from India, Uganda, Nigeria, and Ethiopia linking absence of a second caregiver with increased emotional strain, reduced supervision, and higher daily responsibilities (19,23,24,26). Stable and supportive family structures appear to serve as essential buffers against psychological stress.

Low maternal education (maternal primary vs secondary: AOR ≈ 2.17) also increased depression risk, consistent with previous studies showing that parental—particularly maternal—education enhances health literacy, access to resources, and responsiveness to early mental-health concerns (7,17,26,28). Although family support and absence of family conflict showed non-significant protective effects, the trends matched extensive evidence demonstrating that cohesive family environments reduce depression risk (7,21,26). Physical activity also showed a non-significant protective tendency, aligning with global and regional work linking exercise to improved mood (18,24).

Perceiving the school environment as stressful increased depression odds by nearly twofold, reinforcing the influence of school climate—including teacher support, peer relations, and perceived safety—on adolescent well-being (18,22,26). Together, the significant predictors identified in this study—academic pressure, stressful school

environment, relational bullying, family instability, and low maternal education—form a coherent pattern reflecting chronic stress, limited support, and social isolation. These results align strongly with ecological models of adolescent development emphasizing the interplay of family, peer, and school systems (6,9,11).

The findings are consistent with Ethiopian literature highlighting family dynamics, school stressors, and socioeconomic conditions as major correlates of adolescent mental health (26,27,29–31). Differences such as the strong effect of social exclusion may reflect cultural dynamics of peer relations in Ethiopian schools. Overall, the results indicate the need for multi-level interventions, including school-based anti-bullying strategies, stress-management programs, counseling services, family-focused supports, and integration of validated PHQ-9 screening into school health systems (14,15). These recommendations align with global guidelines for promoting adolescent mental health (6,11).

7. Strengths and limitations

7.1. Strengths:

Use of a validated screening tool (PHQ-9) (14,15);

Relatively large school-based sample with stratified sampling across school types;

Comprehensive range of sociodemographic, family, school, and behavioral determinants.

7.2. Limitations:

Cross-sectional design prevents causal inference.

Self-report measures may incur social-desirability or recall bias.

The PHQ-9 is a screening tool (not a diagnostic interview) though it is well validated for epidemiological screening (14).

8. Conclusion

Depressive symptoms are common among middle adolescents in Asella (30.5%). Independent determinants were academic pressure, social-exclusion bullying, living with mother only or living alone, lower maternal education, and perceiving the school environment as stressful. Family support and physical activity showed protective trends but did not reach statistical significance in the adjusted model. Interventions should prioritize school climate (anti-bullying, counseling), support for single-parent and vulnerable households, and policies reducing excessive academic pressure.

9. Recommendations

On School level, we recommend implementing anti-bullying policies with particular focus on social/relational exclusion; providing psychosocial counsellors or trained focal teachers and integrating stress-management curricula.

In the Family/community, parenting programs and targeted support for single-parent households; outreach to mothers with lower educational attainment are recommended to lower risk of depression in middle adolescent students holding structure.

The Health system should incorporate routine PHQ-9 screening in schools with clear referral pathways to adolescent mental-health services; train primary-care providers in adolescent mental-health care.

Longitudinal studies to establish causal pathways; qualitative studies to explore mechanisms (e.g., why social exclusion exerts strong effects) and intervention trials to evaluate school-based programs are also recommended.

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11. Annexes

Annex 01: Introduction to Participants

Title of the research project: Cross sectional study on Magnitude of depression and associated factors among middle adolescent students going to selected schools in Asella town, Oromia, Ethiopia.

First of all, I would like to thank you in advance for your cooperation and consent in participation in this study. Please read about the general information of the study. If you have any questions regarding the study, please ask freely.

The results of the study will be used as baseline information to design appropriate intervention strategies to improve adolescents' mental health. The questionnaire contains closed ended questions and will be provided in self-administered form. You are therefore kindly requested to provide genuine answers to the questions. You are not expected to mention your name or address. The information you provide is confidential and is used only for the purpose of this study. If you have any questions, don't hesitate to ask the data collector. Your cooperation and participation until the completion of the questionnaire is very necessary for the successful completion of the study.

I therefore ask for your genuine willingness. However, you have the right to refuse if you are not voluntarily participating by making a thick mark in 'No' in the box below.

Are you a volunteer? Yes -----No ----

Thank you in advance for your cooperation.

Questionnaire code: _____

Persons to contact: If you have any question to ask, please contact:

Firegenet Gossa (MD)

+251926790247

Firegenetgossa27@gmail.com

Annex 2: Consent and Assent Form for Adolescents Participating in Research Questionnaire

Title of the research: Magnitude of depression and associated factors among middle adolescent students going to selected schools in Asella town, Oromia, Ethiopia: A cross sectional study.

Principal Investigator: Fregenet Gossa

Institution: Arsi University

Contact Information: Phone: +251926790247

E-mail:firegenetgossa27@gmail.com

Date:

1. Introduction

You are being invited to take part in a research study. This form provides information about the study, and your participation is entirely voluntary. Please read through it carefully before deciding whether or not you want to participate.

2. Purpose of the Study

The purpose of this study is to assess the magnitude of depression, anxiety, stress and associated factors among adolescent students. We want to learn more about the magnitude of depression and associated factors among middle adolescent students going to selected schools in Asella town. Your responses will help us understand.

3. Procedures

If you agree to participate, you will be asked to complete a questionnaire. This questionnaire will take approximately 20 minutes to finish. The questions will ask about your experiences, opinions, and feelings about certain topics. You do not have to answer every question, and you may stop at any time.

4. Risks and Discomforts

There are no expected risks to participating in this study. However, if you feel uncomfortable answering any of the questions, you can skip them or stop participating entirely. If you experience any distress, please inform the researcher immediately. If needed, support resources will be available.

5. Benefits

There may not be direct benefits to you for participating in this study. However, your participation will help us better understand the magnitude of depression and associated factors among middle adolescent students going to selected schools in Asella town.

6. Confidentiality

Your responses will be kept confidential. No information that could identify you will be shared in any reports or publications resulting from this study. All data will be stored securely, and only authorized research personnel will have access to it.

7. Voluntary Participation

Your participation in this study is entirely voluntary. You may choose to not participate, or you may choose to stop participating at any time without any negative consequences.

8. Assent for Adolescents

Since you are under 18 years old, we need your agreement to participate. By signing below, you are indicating that you understand the study and agree to take part in it. You may ask any questions about the study before, during, or after your participation. You can also ask for help at any time during the study through data collectors or through the address provided at the end of the questionnaire.

9. Consent for Parents or Guardians

Since you are under 18, your parent or legal guardian must also give their permission for you to take part in this study. This separate consent form for parents/guardians is attached.

10. Contact Information

If you have any questions or concerns about the study, you can contact the investigator.

Adolescent Assent

By signing below, I agree to participate in this research study. I understand that I can stop at any time, and that my participation is completely voluntary.

Participant's Name: _____

Participant's Signature: _____

Date: _____

Parent/Guardian Consent

I have been informed about this study and agree to allow my child to participate. I understand that they can withdraw from the study at any time.

Parent/Guardian's Name: _____

Parent/Guardian's Signature: _____

Date: _____

Questionnaire on Depression and associated factors among Adolescent Students in Asella Town, Oromia, Ethiopia

Section 1: Socio Demographic Information

Please answer the following questions about yourself.

1. **Age**: _____
   - (Please write your age in years)
2. **Gender**:
   - ☐ Male ☐ Female
3. **Grade Level**:
   - ☐ Grade 9 (Secondary) ☐ Grade 10 (Secondary)
   - ☐ Grade 11 (Secondary) ☐ Grade 12 (Secondary)
4. **Type of School**:
   - ☐ Public School ☐ Private School ☐ Nongovernmental owned
5. **Family Structure**:
   - ☐ Lives with both parents ☐ Lives with mother only
   - ☐ Lives with father only ☐ Lives with relatives/guardians
   - ☐ Lives alone
6. **Parental Educational Level**:
   - **Father**: **Mother**:
     - ☐ No formal education ☐ No formal education
     - ☐ Primary education ☐ Primary education
     - ☐ Secondary education ☐ Secondary education
     - ☐ Higher education ☐ Higher education
7. **Household Income**:
   - ☐ Low: <10,000 birr/year

- ☐ Medium:10,000-50,000 birr/year
- ☐ High: >50,000 birr/year

8. **Do you have any siblings?**

- ☐ Yes ☐ No
- If yes, how many siblings do you have? _____

Section 2: Mental Health Screening

Depression (Using the Patient Health Questionnaire-9 (PHQ-9))

Please read the following questions carefully and answer how often you have been bothered by each problem over the past two weeks.

Question	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things?	[ ]	[ ]	[ ]	[ ]
2. Feeling down, depressed, or hopeless?	[ ]	[ ]	[ ]	[ ]
3. Trouble falling or staying asleep, or sleeping too much?	[ ]	[ ]	[ ]	[ ]
4. Feeling tired or having little energy?	[ ]	[ ]	[ ]	[ ]
5. Poor appetite or overeating?	[ ]	[ ]	[ ]	[ ]
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down?	[ ]	[ ]	[ ]	[ ]
7. Trouble concentrating on things, such as reading the newspaper or watching television?	[ ]	[ ]	[ ]	[ ]
8. Moving or speaking so slowly that other people could have noticed? Or being so fidgety or restless that you have been moving around a lot more than usual?	[ ]	[ ]	[ ]	[ ]
9. Thoughts that you would be better off dead, or of hurting yourself in some way?	[ ]	[ ]	[ ]	[ ]

Section 3: Factors contributing to depression

Please answer the following questions based on your experience.

1. **Do you experience academic pressure or stress?**

- ☐ Yes ☐ No
- If yes, please specify the main causes: _____

2. **Do you experience bullying or peer-related issues at school?**

- ☐ Yes ☐ No
- If yes, what type of bullying (e.g., physical abuse, verbal, social exclusion)? _____

3. **Do you feel supported by your family?**

- ☐ Yes ☐ No

4. Have you ever witnessed fight among your family?

- ☐ Yes ☐ No

5. **Do you engage in any physical exercise or outdoor activities?**

- ☐ Yes, regularly ☐ Yes, occasionally ☐ No
- If yes, which type of exercise or outdoor activities do you participate on?

  ☐ Walking / Jogging / Running ☐ Cycling

  ☐ Team sports (e.g., football, basketball, volleyball)

  ☐ Individual sports (e.g., martial arts, gym, Fitness training)

  ☐ Other (please specify) _____

6. **Do you use any form of social media?**

- ☐ Yes, regularly ☐ Yes, occasionally ☐ No
- If yes, how many hours per day do you spend on social media? _____ hours

7. **Have you ever used substances such as:**

- **Alcohol** ☐ Yes ☐ No

- **Tobacco** ☐ Yes ☐ No
- **Cigarette** ☐ Yes ☐ No
- **Recreational rugs** ☐ Yes ☐ No

8. **Have you experienced any major life events (e.g., loss of a family member, divorce, moving) in the past year?**

- ☐ Yes ☐ No
- If yes, please specify: _____

9. **Do you feel that the school environment is stressful?**

- ☐ Yes ☐ No
- Please explain why or why not: _____

Thank you for participating in this study!

Your responses are valuable and will contribute significantly to understanding mental health among adolescents in Asella Town.

Notes:

- If you are feeling depressed and feel like you need professional help please seek help through the contact information provided earlier.

Annex 03: □□□□ □□□□□□ □□□□□ □□□□

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Annex 04: Seensa Hirmaattotaaf

Mata duree pirojektii qorannichaa: Qo'annoo Qaxxaamuraa Guddina dhiphina sammuu fi wantoota kanaan walqabatan barattoota umrii kurnanii giddu galeessaa manneen barnootaa filatamoo magaalaa Asellaa, Oromiyaa, itoophiyaa dhaqan.

Duraan dursee qorannoo kana irratti hirmaachuuf tumsaa fi hayyama nuuf kennitaniif dursee isin galateeffachuun barbaada. Mee waa'ee odeeffannoo waliigalaa qorannichaa dubbisaa. Qo'annaa kana ilaalchisee gaaffii yoo qabaattan bilisaan gaafadhaa.

Bu'aan qorannichaa akka odeeffannoo bu'uuraatti kan itti fayyadamu tarsiimoo gidduu seensaa sirrii ta'e kan fayyaa sammuu dargaggoota fooyyessuuf ta'u dizaayinii gochuuf ni ta'a. Gaaffiin kun gaaffilee cufaman kan of keessaa qabu yoo ta'u, bifa ofiin of bulchaniin kan kennamu ta'a. Kanaaf gaaffiiwwan dhiyaataniif deebii dhugaa akka kennitan kabajaan isin gaafanna. Maqaa ykn teessoo kee kaasuun si irraa hin eegamu. Odeeffannoon isin kennitan iccitii kan ta'ee fi kaayyoo qorannoo kanaa qofaaf kan ooludha. Gaaffii yoo qabaattan, nama daataa walitti qabu gaafachuu irraa duubatti hin jedhinaa. Qorannichi milkaa'inaan akka xumuramuuf tumsi fi hirmaannaan keessan hanga gaaffilee xumuramutti baay'ee barbaachisaadha.

Kanaaf fedhii dhugaa keessan nan gaafadha. Haa ta'u malee, saanduqa armaan gadii irratti 'Lakki' jechuun mallattoo furdaa kaa'uudhaan fedhii keetiin hirmaachuu yoo baate diduu mirga qabda.

Tola ooltummaadhaa? Eeyyee -----Lakki ----- .

Tumsa keessaniif dursinee galatoomaa.

Koodii gaaffii: _____ .

Namoota qunnamuu qabdan: Gaaffii gaafachuu qabdan yoo qabaattan:

Fireegannat Goosaa +251926790247 irratti bilbilaa

Firegenetgossa27@gmail.com irratti ergaa

Dabalata II: Unka Hayyamaa fi Hayyama Dargaggoota Gaaffii Qorannoo irratti Hirmaataniif

Mata duree qorannichaa: Guddina dhiphina sammuu fi wantoota kanaan walqabatan barattoota dargaggoota giddu galeessaa manneen barnootaa filatamoo magaalaa Asellaa, Oromiyaa, itoophiyaa keessa deeman biratti: Qo'annoo qaxxaamuraa.

Qorataa Muummee: Fireegannat Goosaa
Dhaabbata: Yuunivarsiitii Arsii
Odeeffannoo Quunnamtii: Bilbila: +251926790247
Imeelii:firegenetgossa27@gmail.com irratti ergaa

Guyyaa:

1. Seensa

Qo'annoo qorannoo irratti akka hirmaattan affeeramtanii jirtu. Unkaan kun waa'ee qorannichaa odeeffannoo kan kennu yoo ta'u, hirmaannaan keessan guutummaatti fedhii keessaniiti. Mee hirmaachuu barbaadduu fi dhiisuu kee murteessuu kee dura sirriitti dubbisi.

2. Kaayyoo Qorannichaa

Kaayyoon qorannoo kanaa guddina dhiphina sammuu, yaaddoo, dhiphinaafi wantoota kanaan walqabatan barattoota dargaggoota biratti madaaluudha. Barattoota dargaggoota giddu galeessaa manneen barnootaa filatamoo magaalaa Asellaatti deeman biratti guddina dhiphina sammuu fi wantoota kanaan walqabatan caalaatti baruu barbaanna. Deebiin isin kennitan hubachuuf nu gargaara.

3. Hojimaata

Yoo hirmaachuuf walii galte gaaffilee akka guuttu si gaafatama. Gaaffiin kun xumuramuuf tilmaamaan daqiiqaa 20 fudhata. Gaaffiiwwan waa'ee muuxannoo, yaada fi miira mata dureewwan tokko tokko irratti qabdan ni gaafatu. Gaaffii hundaaf deebii kennuu hin qabdu, yeroo barbaaddettis dhaabuu dandeessa.

4. Balaa fi Mijachuu dhabuu

Qorannoon kun hirmaachuun balaan eegamu hin jiru. Haa ta'u malee, gaaffiiwwan kamiyyuu deebisuun yoo sitti hin tolle, darbuu ykn guutummaatti hirmaachuu dhiisuu dandeessa. Dhiphinni kamiyyuu yoo isin mudate hatattamaan qorataa beeksisaa. Yoo barbaachise qabeenyi deeggarsa ni jiraata.

5. Faayidaa

Qorannoo kana irratti hirmaachuu keetiin faayidaan kallattiin siif hin argamne ta’a. Haa ta’u malee, hirmaannaan keessan guddina dhiphina sammuu fi wantoota kanaan walqabatan barattoota dargaggoota giddu galeessaa manneen barnootaa filatamoo magaalaa Asellaatti deeman biratti akka gaariitti hubachuuf nu gargaara.

6. Iccitii eeguu

Deebiin keessan iccitii ta'ee ni eegama. Odeeffannoon adda si baasuu danda’u kamiyyuu gabaasa ykn maxxansa qorannoo kana irraa maddu kamiyyuu keessatti hin qoodamu. Daataan hundi haala nageenya qabuun kan kuufamu yoo ta’u, hojjettoota qorannoo hayyamaman qofatu argachuu danda’a.

7. Hirmaannaa Tola Ooltummaa

Qo’annoo kana irratti hirmaachuun keessan guutummaatti fedhii keessaniiti. Hirmaachuu dhiisuu filachuu dandeessa, ykn yeroo barbaaddetti bu’aa hamaa tokko malee hirmaachuu dhiisuu filachuu dandeessa.

8. Hayyama Dargaggootaaf

Umuriin kee waggaa 18 gadi waan ta’eef, hirmaachuuf hayyama kee barbaachisa. Mallattoo armaan gadi kaa’un, qorannoo kana akka hubattu fi hirmaachuuf waliigaltee akka qabdu agarsiisa. Gaaffii qorannoo irratti qabaachuu yoo barbaadde, dura, yeroo qorannoon gaggeeffamu ykn booddee gaafachuu dandeessa. Akkasumas, qorannoo keessatti yeroo kamiyyuu deeggarsa gaafachuuf, qaama odeeffannoo sassaabaa ykn teessoo gaaffii keessatti argamu fayyadamuu dandeessa.

9. Hayyama Warra ykn Guddiftootaaf

Umuriin kee waggaa 18 gadi waan ta’eef, maatiin kee yookiin eebbisaa seeraa hayyama kee qorannoo kanaaf kennuu qaba. Foomii hayyamaa maatii/eebbisaa seeraa addaa kana waliin kennameera.

10. Odeeffannoo Quunnamtii

Waa’ee qorannichaa gaaffii ykn yaaddoo yoo qabaattan qorataa qunnamuu dandeessu.

Hayyama Dargaggootaa

Armaan gaditti mallatteessuudhaan qorannoo qorannoo kana irratti hirmaachuuf walii gala. Yeroo barbaadetti dhaabuu akkan danda'u, hirmaannaan koos guutummaatti fedhii koo akka ta'e nan hubadha.

Maqaa Hirmaataa: _____ .

Mallattoo Hirmaataa: _____ .

Guyyaa: _____

Hayyama Warra/Guddistuu (yoo barbaachisaa ta'e) .

Waa'ee qorannoo kanaa kan naaf beeksise yoo ta'u, daa'imni koo akka hirmaatu hayyamuuf walii galeera. Yeroo barbaadanitti qo'annoo irraa of baasuu akka danda'an nan hubadha.

Maqaa Warra/Guddistuu: _____ .

Mallattoo Warra/Guddistuu: _____ .

Guyyaa: _____

Gaaffilee Dhiphina sammuu fi wantoota kanaan walqabatan Barattoota Dargaggoota Magaalaa Asellaa, Oromiyaa, itoophiyaa.

Kutaa 1: Odeeffannoo Hawaasummaa Dimoogiraafii

Mee waa'ee ofii keessanii gaaffilee armaan gadii deebisaa.

1. Umurii: _____ .

o (Umurii kee waggaan barreessi)

2. Saala: o Dhiira o Dubartii

3. Sadarkaa Kutaa:.

o Kutaa 9ffaa (Lammaffaa) . o Kutaa 10ffaa (Lammaffaa)

o Kutaa 11ffaa (Sadarkaa Lammaffaa) . o Kutaa 12ffaa (Lammaffaa) .

4. Gosa Mana Barumsaa:

o Mana Barumsaa Mootummaa o Mana Barumsaa Dhuunfaa

o Mana Barumsaa Liqii mootummaa hin taane

5. Caasaa Maatii:

o Warra lamaan waliin jiraata o Haadha qofa waliin jiraata

o Abbaa qofa waliin jiraata o Fira/guddistoota waliin jiraata

o Kophaa jiraata

6. Sadarkaa Barnoota Warraa:

o Abbaa: o Haadha: .

▪ Barnoota idilee hin qabu ▪ Barnoota idilee hin qabu

▪ Barnoota sadarkaa tokkoffaa ▪ Barnoota sadarkaa tokkoffaa

▪ Barnoota sadarkaa lammaffaa ▪ Barnoota sadarkaa lammaffaa

▪ Barnoota olaanoo ▪ Barnoota olaanoo

7. Galii Maatii:

o Gadi aanaa: <10,000 birrii/waggaatti

o Giddugaleessa:waggaatti birrii 10,000-50,000

o Ol'aanaa: >50,000 birrii/waggaatti

8. Obbolaa qabdaa? o Eeyyee o Lakkii

o Yoo eeyyee ta'e obbolaa meeqa qabda?

Kutaa 2: Sakatta’iinsa Fayyaa Sammuu

Dhiphina sammuu (Gaaffii Fayyaa Dhukkubsataa-9 (PHQ-9) Fayyadamaa) .

Maaloo gaaffilee armaan gadii sirriitti dubbisaatii torban lamaan darban keessatti tokkoon tokkoon rakkoon yeroo meeqa akka isin rakkise deebisaa.

Gonkumaa miti Guyyoota hedduu Guyyaa walakkaa ol Guyyaa hunda jechuun ni danda’ ama

1. Wantoota hojjechuuf fedhii ykn gammachuu xiqqaa qabaachuu?

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2. Gadi, dhiphina ykn abdii dhabuu? [ ] [ ] [ ] [ ]

3. Rakkoo kufuu ykn hirriba keessa turuu, ykn garmalee rafuu?

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4. Dadhabbiin ykn humna xiqqaa qabaachuu? [ ] [ ] [ ] [ ]

5. Fedhii nyaataa gaarii dhabuu moo garmalee nyaachuu? [ ] [ ] [ ] [ ]

6. Ofii kee irratti miira hamaa sitti dhaga’amuu—ykn kufaatii ta’uu kee ykn ofii keetii ykn maatii kee gadi dhiisuu kee? [ ] [ ] [ ] [ ]

7. Wantoota akka gaazexaa dubbisuu ykn televijiinii ilaaluu irratti xiyyeeffachuuf rakkachuu?

[ ] [ ] [ ] [ ]

8. Socho’uu ykn suuta jechuu akka namoonni biroo hubachuu danda’an? Moo akka malee fidgety ykn boqonnaa dhabuudhaan yeroo biraa caalaa baay'ee socho'aa turte?

[ ] [ ] [ ] [ ]

9. Yaada du'uu siif wayya, moo karaa tokkoon of miidhuu? [ ] [ ] [ ] [ ]

Kutaa 3: Sababoota Dhiphina

Muuxannoo keessan irratti hundaa'uun gaaffilee armaan gadii deebisaa.

1. Dhiibbaan barnootaa ykn dhiphinni si mudataa? o Eeyyee o Lakk

o Yoo eeyyee ta’e sababoota gurguddoo ibsaa: _____ .

2. Mana barumsaa keessatti bullying ykn dhimmoonni hiriyaa wajjin walqabatan si mudataa?

o Eeyyee o Lakk

o Yoo eeyyee ta'e, gosa bullying akkamii (fkn, qaamaan, afaaniin, hawaasummaan ala ta'uu)? _____ .

3. Maatii keetiin akka deggeramu sitti dhaga'amaa? o Eeyyee o Lakk

4. Maatii kee gidduutti walitti bu'iinsa ykn lola argitee jirtaa?

o Eeyyee o Lakk

5. Sochii qaamaa ykn sochii alaa kamiyyuu irratti bobbaattaa?

o Eeyyee, yeroo hunda o Eeyyee darbee darbee o Lakk

- Eeyyee yoo ta'e, shaakala yookiin sochii alaa kam akka hirmaattu filadhu (hedduu filachuu ni dandeessa):

o Deemuu / Jogging / Fiigu o Baaskiila fe'achuu

o Taphoota garee (fakkeenyaaf, kubbaa miilaa, basketball, volleyball)

o Taphoota dhuunfaa (fakkeenyaaf, martial arts, gym, leenjii qaamaa)

Kan biraa (mee ibsi) _____

6. Miidiyaa hawaasaa bifa kamiinuu fayyadamtuu?

o Eeyyee, yeroo hunda o Eeyyee darbee darbee o Lakk

o Yoo eeyyee ta'e guyyaatti sa'aatii meeqa miidiyaa hawaasaa irratti dabarsitu? _____ sa'aatiiwwan

7. Wantoota akka alkoolii, tamboo, ykn qoricha sammuu namaa hadoochu fayyadamtee beektaa?

Alkoolii: o Eeyyee o Lakk
Tobaakoo: o Eeyyee o Lakk
Sigareettii: o Eeyyee o Lakk
Dawaa bashannanaa / recreational drugs o Eeyyee o Lakk

8. Waggaa darbe keessatti taateewwan jireenyaa gurguddoon (fkn, miseensa maatii dhabuu, wal hiikuu, socho'uu) si mudataniiru? o Eeyyee o Lakk

o Yoo eeyyee ta'e, maaloo ibsaa: _____ .

9. Haalli mana barumsaa dhiphina akka qabu sitti dhaga'amaa? o Eeyyee o Lakk

o Maaliif ykn maaliif akka hin taane ibsi: _____ .

Qo'annoo kana irratti waan hirmaattaniif galatoomaa!

Deebiin keessan gatii guddaa kan qabuu fi fayyaa sammuu dargaggoota Magaalaa Asella keessa jiran hubachuuf gumaacha guddaa qaba.

Hubachiisa:
Yoo dhiphinni sitti dhaga’ame, yaaddoon ykn dhiphinni si mudatee fi gargaarsa ogeessaa akka si barbaachisu sitti dhaga’ame karaa odeeffannoo quunnamtii duraan kennameen gargaarsa barbaadi.

Thesis Approval Sheet

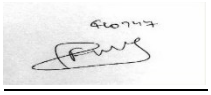
This is to certify that the thesis entitled:

Depression Burden and Determinants among Middle-Adolescent Students in Asella, Ethiopia: A Cross-Sectional Study 2025 submitted by Dr Firegenet Gossa Ayele, ID No. Ex/0600/14, has been reviewed and approved by the undersigned, based on the comments and suggestions provided during the thesis review.

Student Declaration

I, the undersigned, declare that I have incorporated the comments and suggestions of my advisors in to my thesis.

Name of Student: Dr Firegenet Gossa Ayele

Signature:  Date: 11/12/2025

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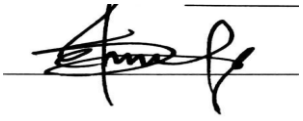
2. Name: Ashenafi Habtamu Signature: 

   Date: 11/12/25