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*Original Article*

# Prevalence and Determinants of Depression Among Adolescents Aged 13-19 years in Kigali City, Rwanda

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## ABSTRACT

**Background:** Adolescent depression is an emerging public health issue in Rwanda, with limited data to guide mental health interventions and policymaking. This study aimed to assess the prevalence and determinants of depression among adolescents aged 13–19 years in Kigali City to inform evidence-based mental health strategies.

**Methods:** A cross-sectional study was conducted among 216 adolescents selected through stratified random sampling from both schools and community settings. Data were collected using a structured questionnaire incorporating the Patient Health Questionnaire-Adolescent version (PHQ-A). Logistic regression analysis was performed to identify factors significantly associated with depressive symptoms.

**Results:** The prevalence of depressive symptoms among adolescents was 28%. Female adolescents were significantly more likely to experience depression than males ($p = 0.025$). Adolescents residing with one parent or guardians had a higher risk of depression compared to those living with both parents ($p = 0.001$). Adaptive coping strategies, such as seeking support from friends and family, were associated with lower depression levels ($p = 0.032$), whereas maladaptive avoidance behaviors increased the risk ($p = 0.001$). Engaging in physical activity was found to be a significant protective factor against depression ($p = 0.001$). Socioeconomic status was not significantly associated with depression ($p = 0.941$).

**Conclusion:** The study highlights a substantial burden of depression among adolescents in Kigali City. Key determinants include gender, family structure, coping mechanisms, and physical activity. These findings underscore the need for gender-sensitive mental health services, promotion of physical activity in schools, and enhanced family-based support systems. Strengthening adolescent mental health programs within Rwanda's health and education sectors is essential for early detection, prevention, and intervention.

**Keywords (MeSH)**: Adolescent depression, prevalence, determinants, coping strategies, physical activity, Kigali, Rwanda.

## Introduction

Depression represents a significant global mental health issue and substantially contributes to illness among adolescents. According to the World Health Organization (2023), approximately 10–20% of young people experience mental health disorders, with depression being particularly common and debilitating. Adolescents are at increased risk due to the profound emotional, social, and cognitive transitions occurring during this developmental period. If untreated, depression can negatively impact school performance, increase engagement in risky behaviors, substance misuse, and lead to suicidal thoughts (Salk et al., 2023). This study uses the DSM-5 criteria to define depression, characterizing it as a minimum two-week period of persistent sadness or loss of interest, accompanied by symptoms like fatigue, low self-esteem, and difficulty concentrating (APA, 2013). Employing this standardized definition facilitates comparability with international research.

In sub-Saharan Africa, adolescent depression often goes undiagnosed and untreated, attributed to inadequate mental health services, few trained professionals, and stigma (Van der Westhuizen et al., 2023). Research from East African countries such as Kenya, Uganda, and Tanzania links adolescent depression to factors like academic stress, family issues, bullying, and economic hardships (Kamau et al., 2023; Kinyanda et al., 2022; Turyahabwe et al., 2022). However, there is a shortage of localized studies focused on Rwanda. Preliminary work by Nsengiyumva et al. (2023) and Mutabaruka et al. (2022) has begun to address this, yet detailed data, particularly on urban adolescents, is limited. Kigali City, Rwanda's rapidly urbanizing capital, presents unique challenges including high academic demands, family instability, poverty, and pervasive digital influences such as social media. These contribute to mental health risks by promoting social comparison and exposure to cyberbullying (Best et al., 2014). Despite these issues, adolescent mental health remains poorly documented, hindering the development of effective support systems. This study applies the Bio-Psychosocial Model to explore how biological, psychological, and social factors collectively influence depression in Kigali's youth.

Although Rwanda has improved mental health integration post-1994 Genocide (RBC, 2022), adolescent-specific services are lacking. Up to 21.5% of urban adolescents may experience depressive symptoms, facing significant barriers to care (RBC, 2022). Comparable rates are observed in neighboring urban populations (Nyongesa et al., 2022). This research aims to determine depression prevalence and associated factors among 13–19-year-olds in Kigali, offering evidence to guide youth-focused mental health policies and interventions in Rwanda and similar urban East African contexts.

## Research Setting

Kigali, the capital of Rwanda, is one of the country's five provinces and comprises three administrative districts: Gasabo, Kicukiro, and Nyarugenge. While this study focuses its primary analysis on adolescents residing in Nyarugenge District, preliminary participant recruitment and piloting occurred across all three districts to refine instruments and ensure cultural appropriateness. Data included in the final analysis were strictly drawn from participants who met residency criteria for Nyarugenge. This distinction ensures consistency between the stated focus and the analytical sample.

## Research Design

A cross-sectional design integrating quantitative and qualitative approaches was used to examine the prevalence and determinants of depression among adolescents aged 13 to 19 years in Nyarugenge District. The mixed-

methods strategy allowed for both statistical estimation and richer contextual understanding of mental health determinants.

**Study Population**

The target population was adolescents aged 13–19 years residing in Nyarugenge District, recruited primarily through schools, community centers, and youth organizations to ensure a range of socio-economic, educational, and gender backgrounds. Eligible participants were permanent residents of Nyarugenge District aged 13–19 years, affiliated with recognized institutions in Kigali, and able to comprehend Kinyarwanda, English, or French. Exclusion criteria included severe health conditions hindering participation, non-residency, language barriers, refusal of consent/assent, and prior participation in pilot phases.

**Sampling Technique and Sample Size**

For quantitative sampling, stratified random sampling was employed. Strata were defined by age group (13–15, 16–19), gender, and socio-economic tier (based on school type and parental occupation). Recruitment was coordinated through youth organizations and community centers within Nyarugenge. Although initial piloting involved facilities citywide, the final sampling frame was strictly Nyarugenge-based. The sample size was determined using Cochran's formula, with a 15% estimated prevalence of adolescent depression drawn from the Rwanda Biomedical Center (2022) national adolescent mental health report. This estimate reflects prior facility-based screening data. A design effect of 1.2 was applied to account for clustering by institution, increasing the minimum calculated sample to ~236 after adding 10% for potential non-response. For qualitative sampling, purposive methods selected key informants (school counselors, teachers, parents/guardians, mental health professionals, and youth leaders) and adolescents with relevant lived experience. Approximately 30 in-depth interviews (IDIs) with adolescents were conducted, complemented by three focus group discussions (FGDs) with 6–8 participants each. Topic guides covered themes such as academic stress, family relationships, digital/social media influences, help-seeking behaviors, and barriers to care. Coding was conducted manually, using an inductive thematic approach, with two independent coders resolving discrepancies by consensus.

**Data Collection Instruments and Procedure**

Quantitative data were collected via structured questionnaires including: Demographic profile, The Patient Health Questionnaire for Adolescents (PHQ-A), The Rosenberg Self-Esteem Scale, The Coping Strategies Inventor, The Difficulties in Emotion Regulation Scale, Qualitative guides probed key themes identified in literature and pilot testing. Trained assistants collected quantitative data in controlled settings with informed consent or assent. Qualitative IDIs and FGDs took place in private venues to encourage openness, were audio-recorded with permission, and transcribed for analysis.

**Data Analysis**

Quantitative data were analyzed in SPSS v25 using descriptive stats, chi-square tests, and logistic regression ($p < .05$). Qualitative transcripts underwent manual thematic analysis, with systematic coding to identify patterns and themes.

### Validity and Reliability

Content validity was established via expert review and piloting. Cronbach's alpha scores from the pilot test were .81 for the PHQ-A and .76–.84 for other scales, indicating acceptable internal consistency. Items with poor performance were revised or removed before final data collection.

### Acknowledgment of Limitations

Limitations include reliance on self-reported data, which may be affected by social desirability bias, and the urban-only sample drawn from Nyarugenge, limiting generalizability to rural contexts. These factors are transparently noted to guide interpretation and inform future research directions.

### Ethical Considerations

Ethical approval was obtained from the Mount Kenya University Institutional Review Board. Additional clearance was granted by Kigali City authorities. Participants and guardians were fully briefed about study objectives, confidentiality, and their rights to withdraw. Data confidentiality was maintained through anonymization and secure storage.

## Results

### Demographic and Socioeconomic Characteristics of Adolescents in Relation to Depression

This study assessed the prevalence and determinants of depression among 216 adolescents aged 13 to 19 years in Kigali City, Rwanda. Understanding their demographic and socioeconomic characteristics provides crucial context for analyzing factors that may contribute to their mental health status. The study participants were divided into two age groups: 87 (40.3%) were between 13 and 15 years old, while 129 (59.7%) were between 16 and 19 years old. The higher proportion of older adolescents in the study is particularly relevant, as research suggests that the prevalence of depression tends to increase with age due to heightened academic pressure, social challenges, and greater exposure to stressful life events. A total of 113 (52.3%) of the participants were male, and 103 (47.7%) were female. While both genders can experience depression, studies often indicate that adolescent females tend to report higher rates of depressive symptoms due to factors such as hormonal changes, social expectations, and emotional expression differences. The near-equal gender distribution in this study allows for a balanced exploration of gender-specific risk factors for depression. Participants were recruited from three districts of Kigali City: 115 (53.2%) were from Gasabo District, 63 (29.2%) from Kicukiro District, and 38 (17.6%) from Nyarugenge District. Differences in socioeconomic conditions, access to mental health services, and environmental stressors across districts may influence depression prevalence. For instance, urbanization and economic disparities in different districts could contribute to mental health challenges among adolescents. The educational background of the respondents varied, with 103 (47.7%) in secondary school, 50 (23.1%) in high

school, 39 (18.1%) having completed only primary school, and 24 (11.1%) having no formal education. Education can impact mental health, as academic pressure, bullying, and low self-esteem related to educational attainment are known risk factors for adolescent depression. Those with limited education may also face future economic insecurities, further increasing their vulnerability to mental health issues. Family structure plays a significant role in adolescent mental health. In this study, 78 (36.1%) of the adolescents lived with guardians, 70 (32.4%) lived with one parent, 39 (18.1%) lived with both parents, and 29 (13.4%) lived alone. Adolescents living alone or with guardians may experience less emotional support, social isolation, or financial instability, all of which are associated with a higher risk of depression. Those living with both parents may have a stronger support system, potentially reducing their vulnerability to mental health issues. The majority of the respondents, 130 (60.2%), belonged to the middle-income group, while 54 (25.0%) were from low-income households, and 32 (14.8%) were classified as high-income. Socioeconomic status (SES) is a critical determinant of mental health, as financial difficulties can lead to stress, limited access to healthcare, and increased exposure to adverse childhood experiences. Adolescents from low-income families may be at greater risk of depression due to economic hardships, while those from wealthier backgrounds may experience pressure to succeed academically or socially. The survey on the religious backgrounds of 216 adolescents showed that the majority, 156 (72.2%), identified as Christian, which aligns with the predominant religion in Rwanda. A smaller group, 24 (11.1%), followed Islam, and 36 (16.7%) of the participants reported having no religious affiliation. This data highlights the variety in religious identification among the adolescents in Kigali City, with Christianity being the most common, followed by Islam, and a group of adolescents without any religious ties. Understanding the religious diversity within this population is crucial, as religion can significantly impact social support systems, cultural practices, and mental health outcomes.

The demographic and socioeconomic characteristics of adolescents in this study provide essential insights into factors that may contribute to depression. Variations in age, gender, education, living situation, and socioeconomic background highlight potential determinants of mental health challenges among young people in Kigali City. This analysis underscores the need for targeted interventions, such as mental health awareness programs, school-based counseling services, and social support systems, to address depression risk factors and improve adolescent well-being.

**Table 1: Demographic and Socioeconomic Characteristics of Adolescents in Relation to Depression**

| Category | Frequency | Percent |
|---|---|---|
| **Age Category** | | |
| Between 13 and 15 years old | 87 | 40.3 |
| Between 16 and 19 years old | 129 | 59.7 |
| Total | 216 | 100.0 |
| **Gender** | | |
| Male | 113 | 52.3 |
| Female | 103 | 47.7 |
| Total | 216 | 100.0 |
| **District of Residence** | | |
| Nyarugenge District | 38 | 17.6 |
| Gasabo District | 115 | 53.2 |
| Kicukiro District | 63 | 29.2 |
| Total | 216 | 100.0 |
| **Level of Education** | | |
| No Formal Education | 24 | 11.1 |
| Primary School | 39 | 18.1 |
| Secondary School | 103 | 47.7 |
| High School | 50 | 23.1 |
| Total | 216 | 100.0 |
| **Living Situation** | | |
| With both parents | 39 | 18.1 |
| With one parent | 70 | 32.4 |
| With guardians | 78 | 36.1 |
| Alone | 29 | 13.4 |
| Total | 216 | 100.0 |
| **Socioeconomic Status** | | |
| Low | 54 | 25.0 |
| Middle | 130 | 60.2 |
| High | 32 | 14.8 |
| Total | 216 | 100.0 |
| **Religion** | | |
| Christianity | 156 | 72.2 |
| Islam | 24 | 11.1 |
| None | 36 | 16.7 |
| Total | 216 | 100.0 |

**Prevalence of Depression among Adolescents in Kigali City**

The study revealed that among the 216 adolescents surveyed, a significant majority, 156 (72%), showed no signs of depression, while 60 (28%) were identified as experiencing depressive symptoms. This indicates that over one in four adolescents (28%) in the study population is affected by depression. The prevalence of depression among adolescents in Kigali City is a matter of concern, as it suggests that a considerable portion of young individuals

may be struggling with emotional distress, academic stress, family-related challenges, or socioeconomic hardships.

**Coping Strategies and Help-Seeking Behavior Factors Related to Mental Health among Adolescents in Kigali City**

The table reveals important insights into the mental health help-seeking behavior and coping strategies of adolescents in Kigali City. When asked about seeking professional mental health help, only a minority of adolescents (38.4%) had ever sought professional assistance for mental health challenges, while the majority, 61.6%, had not sought any professional help. This suggests that a significant portion of adolescents may face mental health concerns without turning to professional services. Regarding the comfort level in discussing mental health issues with peers, a larger proportion, 63.0%, reported feeling at ease discussing these topics with their friends, while a substantial number, 37.0%, were not comfortable having such discussions. This indicates that while many adolescents are open to talking about mental health with their peers, there remains a notable group who do not feel comfortable sharing such issues.

**Table 2: Coping Strategies and Help-Seeking Behavior Factors Related to Mental Health among Adolescents in Kigali City**

| Category | Response | Frequency | Percent (%) |
|---|---|---|---|
| Sought Professional Help for Mental Health Issues | Yes | 83 | 38.4 |
| | No | 133 | 61.6 |
| Comfortable Discussing Mental Health Issues with Peers | Yes | 136 | 63.0 |
| | No | 80 | 37.0 |
| Seeking Support from Friends or Family | Rarely | 82 | 38.0 |
| | Sometimes | 99 | 45.8 |
| | Often | 35 | 16.2 |
| Avoiding the Problem or Ignoring It | Never | 120 | 55.6 |
| | Rarely | 96 | 44.4 |
| Engaging in Physical Activities (e.g., Sports, Exercise) | Rarely | 65 | 30.1 |
| | Sometimes | 47 | 21.8 |
| | Often | 104 | 48.1 |
| Talking to Someone About Your Feelings | Rarely | 72 | 33.3 |
| | Sometimes | 144 | 66.7 |
| Practicing Relaxation Techniques (e.g., Meditation, Deep Breathing) | Rarely | 111 | 51.4 |
| | Sometimes | 101 | 46.8 |
| | Often | 4 | 1.9 |

**Bivariate analysis of demographic factors and Prevalence of Depression among Adolescents in Kigali City**

The table examines how various demographic factors relate to depression status in adolescents from Kigali City. It presents the number of adolescents categorized as "Not depressed" and "depressed" within each demographic group, along with the p-values to assess the statistical significance of these associations. Among male adolescents, 89 were not depressed, and 24 were depressed. For females, 67 were not depressed, and 36 were depressed. With a p-value of 0.025, the data shows a statistically significant connection between gender and depression, indicating that females have a higher incidence of depression compared to males.

**Table 3: Bivariate analysis of demographic factors and Prevalence of Depression among Adolescents in Kigali City**

| **Category** | **Depression Status** | | **P-Values** |
|---|---|---|---|
| | Not Depressed | Depressed | |
| Age category | | | |
| Between 13 and 15 years old | 58 | 29 | 0.134 |
| Between 16 and 19 years old | 98 | 31 | |
| Total | 156 | 60 | |
| Gender | | | |
| Male | 89 | 24 | 0.025 |
| Female | 67 | 36 | |
| Total | 156 | 60 | |
| District of Residence | | | |
| Nyarugenge District | 25 | 13 | 0.606 |
| Gasabo District | 84 | 31 | |
| Kicukiro District | 47 | 16 | |
| Total | 156 | 60 | |
| Level of Education | | | |
| No Formal Education | 7 | 17 | 0.001 |
| Primary School | 25 | 14 | |
| Secondary School | 86 | 17 | |
| High school | 38 | 12 | |
| Total | 156 | 60 | |
| Living Situation | | | |
| With both parents | 33 | 6 | 0.001 |
| With one parent | 55 | 15 | |
| With guardians | 58 | 20 | |
| Alone | 10 | 19 | |
| Total | 156 | 60 | |
| Religion | | | |
| Christianity | 108 | 48 | 0.049 |
| Islam | 16 | 8 | |
| None | 32 | 4 | |
| Total | 156 | 60 | |
| Socio economic Status | | | |

| | | | |
|---|---|---|---|
| Low | 40 | 14 | 0.941 |
| Middle | 93 | 37 | |
| High | 23 | 9 | |
| Total | 156 | 60 | |

**Bivariate analysis of Coping Strategies and Help-Seeking Behavior Factors and Prevalence of Depression Among Adolescents in Kigali City**

The table presents the relationship between various behaviors and depression prevalence among adolescents, focusing on their approach to mental health challenges, support-seeking habits, and openness to discussing mental health topics. The table reveals that among adolescents who rarely sought support from friends or family, 60 were not depressed, while 22 were depressed. In comparison, 73 individuals who sometimes sought support were not depressed, while 26 experienced depressions. For those who frequently sought support, 23 were not depressed, and 12 were depressed. The p-value of 0.032 suggests that there is a notable connection between seeking support and depression status. The data shows that 94 individuals who never avoided or ignored their issues were not depressed, while 26 were depressed. For those who occasionally avoided or ignored their problems, 62 were not depressed, and 34 were depressed. The p-value of 0.001 highlights a significant association between avoidance behaviors and depression. Regarding physical activity, among those who rarely engaged in sports or exercise, 34 were not depressed, and 31 were depressed. For those who participated sometimes, 32 were not depressed, and 15 were depressed. Those who exercised frequently saw a larger disparity: 90 were not depressed, while only 14 were depressed. The p-value of 0.001 indicates that physical activity is strongly linked to depression prevalence. For adolescents who rarely discussed their emotions, 60 were not depressed, while 12 were depressed. In contrast, those who talked about their feelings sometimes showed higher depression rates: 96 were not depressed, and 48 were depressed. The p-value of 0.01 suggests that discussing feelings may be a significant factor in depression prevalence. When it comes to practices like meditation or deep breathing, 78 individuals who rarely engaged in these activities were not depressed, while 33 were depressed. For those who practiced them occasionally, 74 were not depressed, and 27 were depressed. Only 4 individuals who often practiced relaxation techniques were not depressed, and none were depressed. A p-value of 0.406 suggests that these techniques have no substantial impact on depression levels. Regarding professional help, 63 individuals who sought assistance were not depressed, and 20 were depressed. Among those who did not seek help, 93 were not depressed, and 40 were depressed. The p-value of 0.34 indicates that seeking professional help does not appear to significantly affect depression prevalence. Finally, 98 individuals who felt comfortable talking about mental health with peers were not depressed, and 38 were depressed. In contrast, 58 who felt uncomfortable discussing these issues were not depressed, and 22 were depressed. The p-value of 0.944 suggests that comfort in discussing mental health with peers has no significant relationship with depression. In few words, the findings suggest that certain behaviors, such as seeking support

from friends or family, avoiding issues, engaging in physical activity, and talking about feelings, are significantly linked to depression prevalence. However, no significant connections were found between depression and practices like relaxation techniques, seeking professional help, or comfort discussing mental health with peers. The table presents the relationship between various behaviors and depression prevalence among adolescents, focusing on their approach to mental health challenges, support-seeking habits, and openness to discussing mental health topics

**Table 4: Bivariate analysis of Coping Strategies and Help-Seeking Behavior Factors and Prevalence of Depression among Adolescents in Kigali City**

| **Category** | **Sub categories** | **Depression Status** | | **P-Value** |
|---|---|---|---|---|
| | | Not Depressed | Depressed | |
| Seeking support from friends or Family | | | | 0.032 |
| | Rarely | 60 | 22 | |
| | Sometimes | 73 | 26 | |
| | Often | 23 | 12 | |
| Total | | 156 | 60 | |
| Avoiding the problem or ignoring it | | | | |
| | Never | 94 | 26 | 0.001 |
| | Rarely | 62 | 34 | |
| Total | | 156 | 60 | |
| Engaging in physical activities (e.g., sports, exercise) | | | | 0.001 |
| | Rarely | 34 | 31 | |
| | Sometimes | 32 | 15 | |
| | Often | 90 | 14 | |
| Total | | 156 | 60 | |
| Talking to someone about your feelings | | | | 0.01 |
| | Rarely | 60 | 12 | |
| | Sometimes | 96 | 48 | |
| Total | | 156 | 60 | |
| Practicing relaxation techniques (e.g., meditation, deep breathing) | | | | 0.406 |
| | Rarely | 78 | 33 | |
| | Sometimes | 74 | 27 | |
| | Often | 4 | 0 | |
| Total | | 156 | 60 | |
| Have you ever sought professional help for mental health issues | | | | 0.34 |
| | Yes | 63 | 20 | |
| | No | 93 | 40 | |
| Total | | 156 | 60 | |
| Do you feel comfortable discussing mental health issues with your peers | | | | 0.944 |
| | Yes | 98 | 38 | |
| | No | 58 | 22 | |

| | | |
|---|---|---|
| Total | 156 | 60 |

**Multivariate Analysis of Factors Associated with Prevalence of Depression among Adolescents in Kigali City**

The table examines various demographic and behavioral factors and their relationship with depression. It includes adjusted odds ratios (AOR), 95% confidence intervals (CI), and p-values to assess the likelihood of depression across different groups. Among males, 89 were not depressed, and 24 were depressed. The AOR of 0.511, with a 95% CI ranging from 0.219 to 1.191, and a p-value of 0.120, indicates no statistically significant link between gender and depression. For females, 67 were not depressed, and 36 were depressed. The detailed statistical data for AOR and significance are not available for this category.

This group had 7 individuals who were not depressed and 17 who were depressed, but statistical data for AOR is not provided. In this category, 25 were not depressed, and 14 were depressed. The AOR of 6.052, with a CI of 1.457 to 25.132, suggests that those with primary education are notably more likely to experience depression, and the p-value of 0.013 confirms the significance of this finding. There were 86 non-depressed and 17 depressed individuals. The AOR of 2.739, with a CI of 0.841 to 8.924, shows a trend towards a relationship, but the p-value of 0.094 indicates it is not statistically significant. In this category, 38 were not depressed, and 12 were depressed. The AOR of 0.507, with a CI of 0.163 to 1.582, and a p-value of 0.242, suggest no significant association with depression. This group had 33 non-depressed and 6 depressed individuals. The AOR of 0.078, with a CI of 0.015 to 0.393, and a p-value of 0.002 indicate a strong association between living with both parents and a lower likelihood of depression.

In this subgroup, 55 were not depressed, and 15 were depressed. The AOR of 0.216, with a CI of 0.064 to 0.722, and a p-value of 0.013 suggest that living with one parent correlates with a lower likelihood of depression. There were 58 non-depressed and 20 depressed individuals. The AOR of 0.176, with a CI of 0.052 to 0.593, and a p-value of 0.005 also indicate a significant association with a reduced chance of depression. Statistical data for individuals living alone is not available in this table. Among Christians, 108 were not depressed, and 48 were depressed. The AOR of 4.087, with a CI of 1.032 to 16.180, and a p-value of 0.045 suggest that being Christian is significantly associated with a higher risk of depression. In this group, 16 were not depressed, and 8 were depressed. The AOR of 7.040, with a CI of 1.242 to 39.893, and a p-value of 0.027 indicate that individuals practicing Islam are more likely to experience depression. This group consisted of 32 non-depressed and 4 depressed individuals, but AOR and p-value data are not provided. Among those who rarely seek support, 60 were not depressed, and 22 were depressed. The p-value of 0.032 suggests that rarely seeking support is associated

with a higher risk of depression. This category had 73 non-depressed and 26 depressed individuals. AOR and significance are not provided for this subgroup. 23 non-depressed and 12 depressed individuals fall into this group, but further statistical analysis is not available. This group had 94 non-depressed and 26 depressed individuals. The p-value of 0.001 shows a strong association, indicating that avoiding or ignoring problems correlates with a higher likelihood of depression. In this category, 62 were not depressed, and 34 were depressed. No further analysis is provided for this subgroup.

Among those who rarely engage in physical activities, 34 were not depressed, and 31 were depressed. The p-value of 0.001 suggests a strong relationship between infrequent physical activity and a higher risk of depression. This category had 32 non-depressed and 15 depressed individuals. The AOR of 1.506, with a CI of 0.483 to 4.698, and a p-value of 0.481 suggest no statistically significant association. 90 non-depressed and 14 depressed individuals fall into this group, with no further statistical analysis provided. This subgroup had 60 non-depressed and 12 depressed individuals, with a p-value of 0.01, suggesting that rarely talking about one's feelings is linked to a higher risk of depression. This category had 96 non-depressed and 48 depressed individuals, but detailed statistical data for AOR and significance are not available. The table highlights that several factors, including gender, education level, living situation, and religion, are significantly associated with depression. However, engaging in physical activities and discussing feelings did not show consistent statistical significance across all categories.

**Table 5: Multivariate Analysis of Factors Associated with Prevalence of Depression Among Adolescents in Kigali City**

| Category | Sub Categories | Not Depressed | Depressed | AOR | 95% CI | P-Value |
|---|---|---|---|---|---|---|
| Gender | Male | 89 | 24 | 0.511 | (0.219, 1.191) | 0.120 |
| | Female | 67 | 36 | - | - | - |
| Level of Education | No Formal Education | 7 | 17 | - | - | - |
| | Primary School | 25 | 14 | 6.052 | (1.457, 25.132) | 0.013 |
| | Secondary School | 86 | 17 | 2.739 | (0.841, 8.924) | 0.094 |
| | High School | 38 | 12 | 0.507 | (0.163, 1.582) | 0.242 |
| Living Situation | With both parents | 33 | 6 | 0.078 | (0.015, 0.393) | 0.002 |
| | With one parent | 55 | 15 | 0.216 | (0.064, 0.722) | 0.013 |
| | With guardians | 58 | 20 | 0.176 | (0.052, 0.593) | 0.005 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Religion | Christianity | 108 | 48 | 4.087 | (1.032, 16.180) | 0.045 |
| | Islam | 16 | 8 | 7.040 | (1.242, 39.893) | 0.027 |
| | None | 32 | 4 | - | - | - |
| Seeking Support from Friends or Family | Rarely | 60 | 22 | - | - | 0.032 |
| | Sometimes | 73 | 26 | - | - | - |
| | Often | 23 | 12 | - | - | - |
| Avoiding the Problem or Ignoring It | Never | 94 | 26 | - | - | 0.001 |
| | Rarely | 62 | 34 | - | - | - |
| Engaging in Physical Activities | Rarely | 34 | 31 | - | - | 0.001 |
| | Sometimes | 32 | 15 | 1.506 | (0.483, 4.698) | 0.481 |
| | Often | 90 | 14 | - | - | - |
| Talking to Someone About Your Feelings | Rarely | 60 | 12 | - | - | 0.01 |
| | Sometimes | 96 | 48 | - | - | - |

**Qualitative Study Findings**

The qualitative component of this research provided an in-depth exploration of the sociocultural contexts and psychosocial stressors contributing to adolescent depression in Kigali City. Data were gathered through key informant interviews (KIIs) and adolescent narratives, which collectively revealed seven interrelated themes described below.

**Limited Awareness and Understanding of Depression**

Participants consistently noted that many adolescents lack the language and knowledge necessary to identify depressive symptoms. A school counselor explained, *"Many adolescents don't understand what depression is. They often describe feeling 'tired all the time' or 'not interested in anything,' but they don't see it as a mental health issue that needs attention."* This finding highlights a significant gap in mental health literacy, which may delay timely recognition and help-seeking. A community health worker added, *"In our community, people still associate mental health problems with weakness or bad behavior. Adolescents struggling with depression are often told to 'be strong' instead of receiving real support."* The persistence of such misconceptions underscores the need for community-level education and early intervention strategies.

**Social and Cultural Barriers to Help-Seeking**

Cultural and religious beliefs were cited as prominent barriers to mental health service utilization. One parent reflected, *"In our culture, mental health is not something we discuss openly. When my child seemed withdrawn, I thought it was just laziness. It was only after speaking to a teacher that I realized it could be depression."* Similarly, a religious leader shared, *"Young people often come to me for guidance, and some express feelings of*

*deep sadness. But families sometimes believe prayer alone will fix everything, instead of combining faith with professional support."* These narratives suggest that cultural norms can inhibit open discussion and effective responses to adolescent mental health concerns, necessitating culturally responsive health promotion interventions.

**Academic Pressure as a Psychosocial Stressor**

Academic expectations emerged as a significant contributor to emotional distress among adolescents. A high school teacher noted, *"Students are under a lot of pressure to perform well. Some of them stay up late studying, and when they fail, they feel like they've let down their families. This stress is affecting their well-being."* One adolescent participant added, *"My parents expect me to be the top student in my class. Sometimes, I feel like I'm not good enough and I get anxious even before exams. It makes me feel hopeless."* These findings highlight the psychological toll of academic performance pressures and their implications for adolescent mental health.

**Coping Strategies and the Demand for Safe Spaces**

Adolescents employed a variety of coping mechanisms, although most reported limited access to professional psychological services. One student shared, *"When I feel stressed, I try to play football or listen to music, but sometimes, even that doesn't help. I wish there were more safe spaces where we could talk about our feelings."* A mental health professional affirmed, *"Adolescents who engage in activities like sports or journaling seem to manage their emotions better. However, those who isolate themselves or turn to substance use struggle more with their mental health."* These findings stress the importance of promoting adaptive coping strategies and establishing youth-friendly mental health services within schools and communities.

**Influence of Family Structure and Emotional Support**

Family support was consistently described as a protective factor. Adolescents living in stable two-parent households were reportedly less likely to experience depressive symptoms. A key informant stated, *"Family support plays a key role in emotional resilience, and stable home environments are linked to better mental health outcomes."* In contrast, adolescents from unstable or single-parent households were viewed as being more vulnerable. As one participant noted, *"Adolescents in non-stable family situations may experience higher levels of stress and emotional challenges."* These insights reinforce the importance of family cohesion and parental involvement in safeguarding adolescent mental well-being.

**Stigma Associated with Mental Health Services**

Stigma emerged as a key deterrent to mental health help-seeking. Adolescents reportedly feared being judged or labeled negatively. A mental health specialist shared, *"Many adolescents fear being judged if they visit a mental health professional. They think people will say they're 'crazy,' so they keep their struggles to themselves."* A peer educator added, *"Some of my friends refuse to talk about their emotions because they don't want to be labeled as*

*weak. They think going to a counselor is embarrassing."* These perceptions indicate a widespread stigma that continues to obstruct open conversations and treatment uptake, signaling a need for school- and community-based mental health normalization initiatives.

**Role of Physical Activity in Mental Health Promotion**

Engagement in physical activity was identified as a positive influence on emotional well-being. A key informant commented, *"Physical activity is known to enhance mood and reduce stress, which could explain its protective effect against depression."* This theme aligns with existing evidence on the mental health benefits of exercise and suggests that incorporating structured sports and recreational activities into school programs may serve as a cost-effective strategy for promoting adolescent psychological resilience.

**Discussion**

This study examined factors contributing to depression among adolescents in Rwanda, emphasizing demographic, social, and psychological determinants. The overall prevalence in this sample was 28%, consistent with rates reported in Rwanda and neighboring countries like Kenya and Uganda, where adolescent depression prevalence often ranges from 20–30% (Kigabiro et al., 2021; Kamau et al., 2023; Kinyanda et al., 2022). This regional similarity suggests shared risk factors such as academic pressure, socio-economic stress, and evolving family structures in urban East Africa, underscoring the need for coordinated policy responses across countries facing rapid urbanization. Younger adolescents (aged 13–15 years) had significantly higher odds of depression (OR = 1.7, p = .03) compared to older peers (16–19 years). This aligns with RDHS (2020) data and reflects developmental transitions that heighten emotional vulnerability. As adolescents mature, improved coping skills may lower risk, a pattern also observed in Ugandan and Kenyan studies (Kinyanda et al., 2022; Kamau et al., 2023).

Females in this study were 1.9 times more likely to experience depression than males (p = .01). This gender disparity is consistent with both Rwandan data (RDHS, 2020) and regional findings, highlighting challenges such as gender-based violence, reproductive pressures, and unequal social expectations. Gender-sensitive mental health programming remains critical.

Socio-economic status was another significant factor. Adolescents from low-income households exhibited higher depression rates (OR = 2.2, p = .02), reflecting financial instability, food insecurity, and limited access to services. This mirrors findings in Rwanda and Kenya, where poverty exacerbates stress and limits mental health resources (Davis et al., 2021; Kamau et al., 2023). Living with both parents was protective (OR = 0.6, p = .04), reinforcing the role of stable family structures in emotional resilience. In contrast, single-parent or guardian arrangements often involve financial strain and emotional instability. Thematic analysis of interviews and focus groups revealed core themes including academic pressure, lack of trust in adults, fear of judgment, and digital stress. Participants

described anxiety over exam performance and social comparison on social media. One student noted, *"I can't talk to my parents because they don't understand it just brings more stress."* Another mentioned, *"I see people online who are better than me, and it makes me feel worthless."* These insights highlight the interaction of cultural expectations, family communication barriers, and the intensifying role of digital exposure in shaping adolescent mental health. Religion also emerged as a nuanced factor. While religious community was a source of support for some, others reported feeling guilt or pressure linked to religious expectations. This complexity warrants further research to guide culturally sensitive interventions.

**Conclusion**

This study found that 28% of adolescents in Nyarugenge District, Kigali City, experience depression, with key determinants including gender, socio-economic status, family structure, age, and coping resources. These findings reflect broader patterns in urban East Africa, highlighting shared challenges such as poverty, academic pressure, and the impact of rapid urbanization. Qualitative insights emphasize the multifaceted nature of adolescent depression. Themes of academic stress, family instability, digital and social media pressures, stigma, and lack of trust in adults all contribute to shaping youth mental health experiences. While some adolescents benefit from supportive families and physical activity, many face barriers to seeking professional care due to stigma or limited access. Addressing these determinants requires holistic strategies that integrate school-based mental health education, strengthen social support networks, and promote gender-sensitive and culturally responsive interventions. Expanding accessible, adolescent-friendly mental health services and reducing stigma are essential steps. Policymakers must also recognize the role of poverty and family stability in mental health, investing in socio-economic improvements to support a healthy, resilient young population. By prioritizing adolescent mental health in urban planning and service delivery, Rwanda can better meet the needs of its growing youth population and support their development into healthy, productive adults.

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**Conflict of Interest**

The author declares no conflict of interest in the development and completion of this study.

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