

Research Article

Depression Among Early Adolescents Attending a School in a Deprived Neighborhood: A Multi-Group Path Analysis of Social Stress, Support, and Context in Addis Ababa, Ethiopia

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Early adolescence (10–14) is a period of heightened vulnerability to depression, shaped by socially patterned stressors. Evidence from low and middle income countries remains limited. This quantitative phase of a critical realist mixed methods study examined how neighborhood, family, and school contexts were associated with depressive symptoms among early adolescents. The study was informed by Pearlin's Stress Process Model and Archer's Morphogenetic Approach within a critical realist framework, which conceptualizes social phenomena as generated by underlying mechanisms rather than fixed regularities. Data were collected from 830 adolescents in a highly deprived area of Addis Ababa using validated measures; 77.7% screened positive for depressive symptoms. Structural equation modeling identified strong tendencies linking neighborhood disorder to depressive symptoms, both directly and indirectly through reduced social support. Family and school stressors also showed direct and indirect pathways, with variations by gender, family structure, and socioeconomic status. These findings map patterned tendencies that inform the qualitative phase, which will investigate the underlying social processes and forms of reflexive response shaping adolescents' experiences of stress and depression.

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1. Introduction

This paper reports on the findings from the quantitative phase of a mixed-methods study investigating the social causes of depression among school-going adolescents living in a deprived neighborhood in Addis Ababa, Ethiopia. The study was informed by a Critical Realist meta-theory, which conceptualizes social phenomena as generated by underlying mechanisms with tendencies rather than fixed regularities. It is theory-driven, integrating Pearlin's Stress Process Model with Archer's Morphogenetic Approach to explain how social stressors shape adolescents' depressive tendencies. Structural equation modeling (SEM) is used to identify patterned tendencies in this quantitative phase, while retroductive analysis will be employed in the qualitative phase to explain why some adolescents living in a deprived neighborhood become depressed while others do not.

Depression in adolescence is a significant global public health concern, understood sociologically not as an isolated personal trouble but as a socially patterned public issue rooted in social structures ^{[1][2][3]}. Meta-analyses estimate a global prevalence of 34% among adolescents ^[4], with the highest burden in low- and middle-income countries (LMICs), where 90% of the world's 1.2 billion adolescents live ^[5]. In sub-Saharan Africa, approximately 26.9 percent of adolescents report depressive symptoms ^[6]. The situation is particularly concerning in Addis Ababa, the capital of Ethiopia, where more than one-third of the population is under 18 years of age ^[7]. Although city-wide studies are limited, available evidence suggests that the prevalence of adolescent depression is around 36%, consistent with the national estimates reported in a recent systematic review ^[8].

Within adolescence, the early adolescent period (10–14 years) deserves particular attention because it represents a critical developmental stage characterized by rapid biological, psychological, and social transitions ^[9]. These developmental changes are associated with increased vulnerability, uncertainty and social challenges, which can trigger the onset of depressive symptoms ^{[10][9]}. UNICEF^[11] estimates that nearly half of all depressive symptoms first emerge during early adolescence. Their early-onset is associated with long-term consequences, including impaired educational attainment, poorer social adjustment, and elevated risks of suicide and self-harm ^{[12][13]}. These factors make early adolescence a decisive window for understanding the social origins of depression.

Adolescent depression is often understood through bio-psychological lenses that focus on individual-level processes. While biological and psychological processes are integral to the experience of depression,

they do not account for the socially patterned tendencies. Thus, a sociological approach highlights the socio-structural factors that make some groups more vulnerable than others ^{[14][3][15]}.

This study adopts a sociological framework that avoids both biological and social reductionism. Instead, it recognizes that social structures shape exposure to stressors, which in turn activate psychological and biological processes. As Pearlin's Stress Process Model demonstrates, social positions pattern exposure to chronic stressors; stressors shape psychological mediators such as self-concept and coping resources; and these mediators influence mental health outcomes ^{[3][16]}.

A prior scoping review of the social causes of adolescent depression in LMICs identified consistent evidence that adverse childhood experiences including neighbourhood deprivation, exposure to violence, family conflict, low social support, and school stressors contribute to depressive outcomes (Authors, 2026). The effects of these stressors also differ by social position. Girls, for instance, may report more depressive symptoms because gender norms often allow girls more emotional expression while placing additional relational and family expectations on them. Boys may report fewer symptoms partly because masculine norms discourage emotional disclosure, which can mask distress rather than eliminate it. At the same time, some boys may develop coping strategies that appear as resilience, depending on their environment and support systems ^{[17][18][19]}. Socioeconomic status also shapes resource allocation, opportunities, and stress exposure within families, influencing home environments, school experiences, and residential conditions ^{[20][21]}. Family structure matters as well, as single-parent households frequently face greater economic pressures and uncertainty than two-parent households, increasing vulnerability to depressive outcomes ^{[18][21]}.

Empirically, research in the social determinants of adolescent depression Ethiopia and particularly in Addis Ababa remains scarce, with most studies focusing on adults or older adolescents, leaving early adolescence largely uncharted, with some notable exceptions, such as Asnake^[22] and Mekonnen et al. ^[23] Theoretically, however, most studies were atheoretical, and focused on associations rather than explanatory mechanisms. They are also predominantly atomistic, examining single-domain stressors without exploring how risks interact across family, school, and neighborhood contexts, thereby failing to explain why some adolescents show a greater tendency to become depressed than others (Authors, 2026). The review highlighted the need for theory-driven research capable of opening the 'black box' between social stressors and depressive tendencies—particularly in early adolescence, where social structures and reflexive capacities are rapidly changing.

Critical realism assumes that social phenomena arise from the interaction of structures, cultures, and human agency operating within open social systems. Rather than seeking universal causal laws, critical realism aims to identify the underlying causal mechanisms that generate observable empirical patterns through retroductive explanation ^[24]. It, therefore, treats social causes as the most adequate level of explanation for these patterns, while recognizing that biological and psychological mechanisms operate within individuals. Our focus on social mechanisms reflects the level at which the patterned variation arises, not a denial of multi-level causation.

Within this meta-theoretical framework, the study combines Pearlin's Stress Process Theory and Archer's Morphogenetic Approach as complementary substantive theories. Pearlin's Stress Process Theory provides the primary explanatory framework for the quantitative phase by conceptualizing depression as arising from socially patterned exposure to chronic stressors and unequal access to protective resources such as social support ^{[3][16]}. It therefore guides the examination of relationships between family, school, and neighbourhood stressors, social support, and depressive symptoms. Archer's Morphogenetic Approach complements this framework by opening the explanatory "black box" between stressors and outcomes. Rather than assuming that exposure to stressors produces depression directly, Archer emphasizes that individuals reflexively interpret, evaluate, and respond to their circumstances over time, and that it is this process that leads to outcomes ^[25].

The aim of this quantitative study, therefore, was to identify patterned associations and conditional pathways that signal where generative mechanisms may be activated or constrained. It examines the strength, direction, and variation of associations among stressors, social support, and depressive symptoms, while considering how structural and cultural conditions shape exposure to stress. Mapping these empirical tendencies provides the foundation for a subsequent qualitative phase that will investigate how and why these tendencies emerge through adolescents' lived experiences, meaning-making processes, and agentic responses.

2. Methods

2.1. Survey Design

This paper reports on the findings from an analysis of a cross-sectional survey of early adolescents in Addis Ababa. Early adolescence is a critical period for understanding the social determinants of depression, with half of all cases emerging during this stage (25–29). Accordingly, this study focuses on

school-going adolescents aged 10–14, a group largely overlooked in Ethiopia, where research has predominantly focused on high school students ^{[26][27][28]}. A government primary school was purposively sampled ~~as~~ in a socio-economically deprived area where the poorest households in the city are concentrated ^[29], and where the largest numbers of social welfare recipients are found ^[30].

A school-based census approach was used for the target population. All pupils aged between 10 and 14 years were eligible to participate in the research. Following the refusal of the parents (n=81) and adolescents (n=6), the final sample involved 830 respondents, which is a response rate of 90.5% in the target group.

2.2. Measures

2.2.1. Questionnaire development

The questionnaire was developed in response to findings from our prior scoping review and operationalized using Pearlin's Stress Process Model. Accordingly, this study measured depressive symptoms (outcome), family, school, and neighborhood stressors (explanatory variables), perceived social support (mediator), and selected socio-demographic covariates. Standardized instruments with established psychometric properties and prior use in Ethiopia were used. Table 1 summarizes the constructs measured and the instruments used.

Construct	Scale	Items	Response Scale	Range	Cronbach's α	Validation Source
Depressive Symptoms	Center for Epidemiologic Studies Depression Scale for Children (CES-DC)	20	0 (not at all) to 3 (a lot)	0–60 (cutoff ≥ 16)	0.864	[31][32]
Family Stressors	International Child Abuse Screening Tool – Child Version (ICAST-C)	34	1 (Never) to 4 (Many times)	34–136	0.941	[33][34]
School Stressors	Perceived School-Related Stress Scale (PSRSS)	16	0 (no stress) to 5 (severe stress)	0–80	0.921	[35]
Neighborhood Disorder	Neighborhood Disorder Scale (adapted)	10	1 (strongly disagree) to 4 (strongly agree)	10–40	0.900	[36]
Perceived Social Support	Multidimensional Scale of Perceived Social Support (MSPSS)	12	1 (very strongly disagree) to 7 (very strongly agree)	12–84	0.929	[37]

Table 1. Summary of Study Constructs and Measurement Instruments

2.2.2. Depressive Symptoms

This is the outcome variable measured by CES-DC. It assesses affective, cognitive, behavioral and somatic symptoms of depression experienced during the previous week. The range of the scores is between 0 and 60 with a cut-off score of ≥ 16 . CES-DC has been previously tested in Ethiopia and has demonstrated good internal consistency with adolescent samples^{[31][32]}. Internal consistency (Cronbach α) in the present study was 0.864.

2.2.3. Social Stressors

The social stressors were measured in the context of family, school and neighborhood.

Family Stressor

Family stressors were operationalized using the home-based victimization items from the ICAST-C. The study used 34 items that focused on exposure to violence, emotional abuse, neglect, physical abuse, and sexual abuse. The respondents were asked how frequently they have experienced each item, with a high score represents an increased abuse. The ICAST-C has proved to be highly reliable in previous studies conducted in Ethiopia^{[33][34]}. Cronbach's α was 0.941.

School Stressors

School stressors were measured with the 16-item PSRSS, assessing stress arising from schoolwork, academic achievement, peers, and teacher or parent expectations. The items were rated using a 6-point scale, with higher scores indicating greater perceived stress. The scale has been proven to be reliable in Ethiopia^[35], and in the present study, Cronbach's α was 0.921.

Neighborhood Stressors

Perceived neighborhood disorder was assessed via a 10-item scale adapted from Kim and Mueller^[38]. Higher scores indicate greater perceived neighborhood disorder. This scale was previously found reliable among students in Addis Ababa^[36]. Cronbach's α for this scale was 0.900.

2.2.4. Social Support

The mediator, perceived social support, was measured using the 12-item MSPSS across family, friend, and significant other domains. Higher scores indicate greater perceived social support. It has a good reliability among adolescents in Ethiopia^[37]. In this study, Cronbach's α was 0.929.

2.3. Questionnaire Adaptation and Pilot Testing

The questionnaire was developed through a systematic process. Following the scoping review, items were selected to operationalize the key social determinants of adolescent depression identified in the literature. The instrument was translated into Amharic and back-translated to ensure semantic equivalence. Expert review assessed relevance, clarity, and cultural appropriateness. A pilot study was conducted with 50 students in a comparable school, followed by a think-aloud procedure^[39] with 10 students, resulting in minor wording revisions. Pilot reliability coefficients ranged from 0.702 to 0.941, confirming the instruments' appropriateness for the target population.

2.4. Data Collection Procedures

Data were collected in April 2025 using paper-based, self-administered questionnaires. The questionnaires were administered after school hours within classrooms, so as not to interrupt regular classroom instruction. The process was supervised by 12 trained enumerators and two coordinators, with each enumerator assigned to a maximum of 15–20 students.

For Grades 4 and 5, enumerators read questions aloud; students in Grades 6–8 completed questionnaires independently, with enumerators providing clarification and checking for incomplete responses. The completion time was between 30 to 45 minutes. Notebooks and pens/pencils were given as a token of appreciation.

2.5. Ethical and Safeguarding Protocols

Permission to conduct the study was granted by the Institutional Review Board of the Ethiopian Society of Sociologists, Social Workers and Anthropologists (ESSWA/L/AA/05903/2025). Following ethical approval, permission was obtained from the school administration, which assigned a focal person to facilitate data collection and provided the required student information. Informed written consent was obtained from parents/guardians and all adolescent participants gave assent. They were informed that they could withdraw at any time without consequences.

A safeguarding protocol was in place as questions regarding family stressors and mental health were sensitive. The enumerators were given training on signs of distress and how to respond to them. The referral pathway was set up with the school unit leader and a nearby specialized mental health hospital as part of the project that financed this study.

Participants' data was anonymised by assigning unique identifiers. Completed questionnaires were kept in locked cabinets, and electronic data files were password protected. The data were only accessible to the research team.

2.6. Data Preparation and Analysis

The data were entered into IBM SPSS Statistics Version 31 and checked for entry errors, outliers, and inconsistencies. There were 11 out of range and 8 extreme outliers identified and corrected after verification. Reverse coding and scale constructions were made as per standard scoring procedures. No missing data were recorded.

For descriptive analysis, IBM SPSS Statistics Version 31 was used, while IBM AMOS Version 29 was used for the structural equation approach. Means and standard deviations were used for descriptive statistics. Bivariate relationships were analyzed using Pearson and Spearman correlation and differences between groups were analyzed using t-tests and one-way ANOVA.

Assumption of multicollinearity, linearity, homoscedasticity and normality were checked before model estimation (Field, 2009; Stevens, 2009; Tabachnick et al., 2013). No multicollinearity problems were found as predictor correlations ranged from 0.45 to 0.63, VIF ranged from 1.30 to 1.59, and tolerance ranged from 0.63 to 0.77. Robust confidence intervals and standard errors were obtained using bias-corrected bootstrapping^{[40][41][42]}.

2.7. Modeling

SEM is employed not for predictive inference, but to examine the empirical plausibility of theoretically derived relationships and patterned tendencies among social stressors, perceived social support, and depressive symptoms across family, school, and neighborhood contexts. SEM enables the identification of demi-regularities including mediation pathways and group-specific variations by gender, family structure, and socioeconomic status. The theoretical relationships were analyzed in a two-step process^[43] (Anderson & Gerbing, 1988).

A Confirmatory Factor Analysis (CFA) validated the five latent constructs. Model fit was assessed using standard indices: $\chi^2/df < 3$, CFI > 0.90 , TLI > 0.90 , and RMSEA < 0.08 ^[44] (Bentler, 1990; Hu & Bentler, 1999; Ullman, 2006). Convergent validity was confirmed via factor loadings ≥ 0.50 , AVE ≥ 0.50 , and CR ≥ 0.70 ^[45] (Fornell & Larcker, 1981). Discriminant validity was evaluated using the Fornell-Larcker criterion (Fornell & Larcker, 1981).

All study constructs demonstrated acceptable reliability, convergent validity, and model fit. The depressive symptoms was best represented by a unidimensional model after removing low-loading items ($\chi^2/df = 3.62$, CFI = 0.982, TLI = 0.973, RMSEA = 0.056; AVE = 0.505, CR = 0.91). Family stressors retained a revised five-factor structure- witnessing violence, emotional abuse, physical abuse, neglect, and sexual abuse- with acceptable fit ($\chi^2/df = 5.18$, CFI = 0.903, TLI = 0.891, RMSEA = 0.071) and AVE/CR values supporting convergent validity. The PSRSS was optimally represented by its original four-factor model (peer-related stressors, school achievement-related stressors, school work pressure, and parent and/or teacher-related stressors) with good fit ($\chi^2/df = 3.98$, CFI = 0.960, TLI = 0.952, RMSEA = 0.060; AVE = 0.529–0.736, CR = 0.763–0.896). The neighborhood disorder was unidimensional with adequate fit ($\chi^2/df =$

3.97, CFI = 0.986, TLI = 0.975, RMSEA = 0.060; AVE = 0.518, CR = 0.902). The social support demonstrated a three-factor structure (family, friends and significant others) with strong fit ($\chi^2/df = 3.79$, CFI = 0.978, TLI = 0.972, RMSEA = 0.058; AVE = 0.568–0.704, CR = 0.860–0.918). The overall measurement model, correlating all constructs, showed good fit ($\chi^2/df = 2.00$, CFI = 0.923, TLI = 0.920, RMSEA = 0.037) and confirmed both convergent and discriminant validity.

After confirming an adequate measurement model, the structural model was estimated to examine the patterned associations and conditional pathways among the study variables. Direct associations and mediated pathways from the three stressor domains to depressive symptoms through perceived social support were examined. Indirect pathways were assessed using bias-corrected bootstrapping (2,000 samples) to evaluate the stability of the mediated tendencies.

Contextual conditioning was tested using multi-group SEM across gender, family structure, and socioeconomic status, measured via perceived family income, to identify “for whom” and “under what conditions” the observed empirical patterns vary. To meet sample size recommendations (~100 per group)^[44], categories were consolidated. Perceived family income was grouped into low (n = 152), moderate (n = 488), and high (n = 190). Family structure was categorized as two-parent households (n = 525), single-parent households (n = 199; combining single mother and single father families), and other arrangements (n = 305; including step-parent families, institutional care, and living with relatives).

In the multi-group estimation, the construct of family stressors did not converge when modeled using its five detailed sub-dimensions. To address this issue, a theoretically informed parceling approach was applied. Specifically, the items within each sub-dimension were summed to form composite indicators, resulting in a reduced set of indicators for the latent construct^[46]. This adjustment enabled successful model convergence for all multi-group analyses.

3. Findings

3.1. Descriptive Analysis

A clear empirical demi-regularity emerged in the sample. Overall, 77.7% (n = 645) of adolescents scored above the CES-DC cut-off (≥ 16), indicating that elevated depressive symptoms are the norm rather than the exception among the early adolescents in the school. Family stress showed substantial variability (M = 49.34, SD = 16.05), indicating that adolescents differed markedly in their exposure to adverse family experiences. Similarly, school stress varied considerably (M = 23.83, SD = 15.88), suggesting that while

some adolescents experienced relatively limited school-related stress, others encountered substantially greater pressures. Perceived neighbourhood disorder also differed across participants ($M = 17.90$, $SD = 6.71$), reflecting variation in how adolescents experienced and interpreted their local environments. Finally, perceived social support demonstrated considerable heterogeneity ($M = 59.04$, $SD = 19.69$), indicating unequal access to potentially protective relational resources.

The patterns suggest that the all adverse situation for the adolescent in this neighbourhood is not uniform, and that there is differential exposure to stressors and protective factors that could explain why some adolescents in this neighbourhood show more depressive symptoms than others. These relationships are analyzed by the structural equation model.

Descriptive analyses showed that depressive symptoms were not randomly distributed across the study population but were distributed systematically by adolescents' social positions. There was a slight gender difference. Girls showed a greater tendency to screen positive for depressive symptoms than boys ($M = 24.27$ vs. 21.48), accompanied by higher exposure to family stress ($M = 51.73$, $SD = 17.83$) and perceived neighbourhood disorder ($M = 19.27$, $SD = 6.87$) and slightly lower perceived social support ($M = 57.74$, $SD = 20.70$). These gender differences were all small but were consistently towards increased cumulative social disadvantage for girls. There was no significant gender difference in school stress ($p = .09$) indicating a similar experience of school-related stressors amongst boys and girls.

The tendency to screen positive for depressive symptoms increased progressively across grade levels, with the lowest levels observed among Grade 4 students and the highest among Grade 8 students ($F(4,825) = 11.80$, $p < .001$). Family circumstances also showed marked social patterning. Adolescents living in stepfamilies, single-father households, and particularly double-orphan households demonstrated greater depressive tendencies than those living with both biological parents ($p < .001$). The substantially higher depressive scores observed among double orphans indicate that parental loss represents one of the strongest markers of vulnerability within the sample. A graded pattern emerged for maternal education: average depressive symptoms tended to be higher among adolescents whose mothers never attended school ($M=24.5$) and lower among those whose mothers held a degree ($M=15.9$, $p<.001$). Average symptoms were also found to be highest in the very low income group ($M=29.0$) and lowest in the high income group ($M=19.6$; $p<.001$).

3.2. A Multi-Group Path Analysis of Social Stress, Support, and Context

The structural model tested whether family, school, and neighborhood stressors directly and indirectly related to depressive symptoms via perceived social support, following Pearlin's Stress Process Theory. Multi-group path analysis was used to examine if such relationships varied as a function of gender, family structure and perceived family income. Direct, indirect, and total standardized effects in the structural model relating family, school, and neighborhood stressors to perceived social support and the development of depression symptoms are provided in Table 1. For all pathways, standardized coefficients (β) and 95% confidence intervals are presented.

Paths	Direct Effect β [95% CI]	Indirect Effect β [95% CI]	Total Effect β [95% CI]
Family stressors → Social support	-0.267*** [-0.392, -0.143]	NA	-0.267*** [-0.392, -0.143]
School stressors → Social support	-0.190*** [-0.282, -0.097]	NA	-0.190*** [-0.282, -0.097]
Neighborhood disorder → Social support	-0.358*** [-0.438, -0.242]	NA	-0.358*** [-0.438, -0.242]
Family stressors → Depressive symptoms	0.120*** [0.035, 0.199]	0.056*** [0.028, 0.098]	0.176*** [0.094, 0.262]
School stressors → Depressive symptoms	0.189*** [0.106, 0.284]	0.039*** [0.018, 0.069]	0.228*** [0.139, 0.323]
Neighborhood disorder → Depressive symptoms	0.431** [0.350, 0.506]	0.075** [0.040, 0.115]	0.506** [0.425, 0.572]
Social support → Depressive symptoms	-0.209*** [-0.301, -0.122]	NA	-0.209*** [-0.301, -0.122]

Table 2. Direct, indirect and total effects of stressors and social support on depressive symptoms

Note:

β = standardized coefficients; CI = confidence interval.

Indirect effects estimated using bootstrap resampling methods.

All tests are two-tailed.

** $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.*

Neighborhood disorder showed the strongest patterned tendency toward higher depressive symptoms (total $\beta = 0.506$, 95% CI [0.425, 0.572]). This tendency was primarily expressed through a direct pathway ($\beta = 0.431$), indicating that adolescents exposed to higher levels of neighborhood disorder tended to report higher depressive symptoms. A smaller indirect tendency was observed through reduced activation of social support ($\beta = 0.075$), suggesting that the protective role of social support is present but not fully engaged in these contexts.

Family stressors exhibited a moderate patterned tendency to influence depressive symptoms both directly ($\beta = 0.120$) and indirectly through non-activated social support ($\beta = 0.056$). The similar magnitude of direct and indirect tendencies indicates a partial buffering effect, where social support may mitigate the influence of family stress, but only for some adolescents and to varying degrees depending on their access to or activation of supportive resources.

School stressors showed a moderate direct tendency toward depressive symptoms ($\beta = 0.189$) and a smaller indirect tendency via social support ($\beta = 0.039$). This pattern suggests that while school-related stress exerts a noticeable impact on depressive symptoms, the mitigating effect of social support is comparatively weaker in this domain.

Across all pathways, perceived social support was negatively associated with depressive symptoms ($\beta = -0.209$), indicating that adolescents reporting higher levels of perceived social support tended to report fewer depressive symptoms. Overall, the model accounted for approximately 60% of the variance in depressive symptoms ($R^2 = 0.60$).

Among boys, neighborhood stressors exhibited the strongest direct association with depressive symptoms ($\beta = 0.492$, $p < .001$). Among girls, the pattern differed. School stressors showed both direct ($\beta = 0.242$, $p < .001$) and indirect associations with depressive symptoms through perceived social support (indirect $\beta = 0.100$, $p < .001$), whereas family stressors showed a significant direct association with depressive symptoms ($\beta = 0.210$, $p < .001$). School stressors were negatively associated with perceived social support only among girls ($\beta = -0.253$, $p < .001$), indicating that perceived social support mediated part of the relationship between school stressors and depressive symptoms. The model explained a

comparable proportion of variance in depressive symptoms among boys ($R^2 = 0.620$) and girls ($R^2 = 0.585$).

Patterns also differed according to family structure. Among adolescents living in single-parent households, family stressors were negatively associated with perceived social support ($\beta = -0.642$, $p < .001$), yielding a significant indirect association with depressive symptoms through perceived social support (indirect $\beta = 0.245$, $p < .001$). Perceived social support was also directly associated with lower depressive symptoms ($\beta = -0.381$, $p < .001$). Among adolescents living in step-parent families, with relatives, or in institutional care, family stressors showed a significant direct association with depressive symptoms ($\beta = 0.365$, $p = .002$). In two-parent households, neighborhood stressors exhibited the strongest direct association with depressive symptoms ($\beta = 0.469$, $p < .001$). School stressors were significantly associated with depressive symptoms in two-parent households ($\beta = -0.185$, $p < .001$) and other family structures ($\beta = -0.292$, $p = .007$). The model explained the greatest proportion of variance among adolescents in other family structures ($R^2 = 0.823$).

Differences were also observed across perceived family income groups. Among adolescents from low-income households, family stressors showed the strongest direct association with depressive symptoms ($\beta = 0.481$, $p < .001$), with only a small indirect association through perceived social support. Among high-income adolescents, family stressors were indirectly associated with depressive symptoms through perceived social support (indirect $\beta = 0.061$, $p < .001$), whereas neighborhood stressors showed the strongest direct association with depressive symptoms ($\beta = 0.392$, $p < .001$). Among middle-income adolescents, school stressors exhibited the strongest direct association with depressive symptoms ($\beta = 0.615$, $p < .001$). Across all income groups, perceived social support remained negatively associated with depressive symptoms ($\beta = -0.240$ to -0.147 , all $p < .01$). The social stressor most strongly associated with lower levels of perceived social support differed across income groups, with neighborhood stressors showing the strongest association among low-income adolescents ($\beta = -0.425$, $p < .001$) and school stressors among middle-income adolescents ($\beta = -0.344$, $p < .001$). The model explained the greatest proportion of variance among middle-income adolescents ($R^2 = 0.635$).

4. Discussion

4.1. *From Social Stressors to Depression: The Mediating Pathway of Social Support*

The findings of this research support the conclusion that adolescent depressive symptoms have a tendency to be associated with social stressors both directly and indirectly through the absence or non-activation of protective social support. These tendencies are consistent with Pearlin^{[31][16]} who argued that social stressors are linked to the reduction or lack of access to protective social resources, particularly social support which can be called upon by adolescents when structural and relational conditions are conducive. Various studies find that protective social networks are consistently associated with reduced depressive symptoms in LMIC contexts, but their context-specific form may differ^{[47][48][49]}.

Adolescents growing up in deprived neighborhoods, such as Merkato, are shaped by structural conditions including material deprivation, unstable or chaotic social relations, visible disorder, weak institutions, and cultural norms shaped by insecurity or survival strategies. These contextual conditions generate chronic stress, fear, anomie, and alienation, which create tendencies toward depressive symptoms. Adolescents' social and psychological outcomes are further influenced by how they and other actors, such as parents or community groups, engage with these conditions^{[50][51]}. The operation of these underlying structural conditions is illustrated by the strong patterned relationship between neighborhood disorder and depressive symptoms, which occurs both directly and indirectly.

4.2. *Structural Conditioning: The Divergent Tracks of Vulnerability and Resilience*

Depressive symptoms tended to be higher in girls exposed to relational and emotional family and school stressors, which were associated with lower activation of social support. In boys, neighborhood disorder tended to show the strongest direct link with depressive symptoms. These gendered patterns resonate with established literature documenting girls' greater sensitivity to interpersonal stressors and boys' heightened reactivity to external environmental threats^{[52][53]}. Within our CR framework, we interpret these patterns as demi-regularities consistent with the conditioning effects of patriarchal structures, theorized at the level of the real^[25]. This conditioning is understood to probabilistically shape divergent social fields: orienting girls toward relational networks (increasing sensitivity to interpersonal disruptions) and boys toward independent environmental engagement (heightening exposure to external risks)^[54].

The most salient result is that lack of social support was more strongly associated with depression among adolescents in alternative family types, which are frequently environments with disrupted support systems. This pattern, observed in other sub-Saharan African studies^{[55][56]} moves beyond a paradox when viewed through a CR lens. This finding is interpreted as *suggestive* of morphogenetic processes of agency.

SEM cannot observe the underlying generative mechanisms or the reflexive ‘internal conversations’ of adolescents. However, the heightened protective tendency of support in these contexts is consistent with adolescents experiencing and responding to external resources (e.g., from teachers, peers, or kin). This pattern suggests a potential compensatory response to parental limitations and structural constraints^[57].

In the case of low-income family adolescents, family stressors showed a direct and strong patterned tendency toward higher depressive symptoms, with little mediation by social support. In high-income adolescents, stressors tended to erode existing resource advantages, reflected in the non-activation of social support. For middle-income adolescents, school stress emerged as a stronger direct patterned tendency associated with depressive symptoms. These trends are consistent with theoretical predictions of the status-anxiety hypothesis^[58] according to which youths in this stratum are faced with the enhanced academic strains as a perceived pathway to social mobility.

5. Limitations and Future Research

This study has limitations that clarify its scope and point toward future research. The key constructs were measured with specific limitations: socioeconomic status was measured by perceived family income, which is a subjective measure that could be supplemented with objective measures in future research; the family stressors scale (ICAST -C) was limited to abuse and maltreatment, which might not sufficiently represent other persisting family stressors. In addition to this, the study sample comprised only school attending early adolescents. It is therefore not possible to conclude if similar patterned tendencies exist among out-of-school adolescents or among adolescents in more socioeconomically varied or rural environments.

6. Future Research

The present analysis is the first part of a critical realist explanation of adolescent depression. It does not look for general causal laws, but rather for patterned tendencies that link social stressors, perceived social support and depressive symptoms. The next step in this mixed-methods study will be a qualitative phase that will involve the examination of adolescents' internal conversations, relational practices, and everyday experiences through retroductive analysis informed by Archer's Morphogenetic Approach. The qualitative phase will provide an explanatory account of the tendencies observed in the present analysis by breaking open the "black box" between social stressors and depressive symptoms by identifying the structural, cultural, relational, and agentic mechanisms by which adolescents react in different ways to similar stressors.

7. Conclusion

This study offers quantitative evidence for an integrated critical realist account of adolescent depression, while also refining the theoretical framework. Instead of looking for a universal stress process, the results indicated systematic variation of the pathways linking social stressors, perceived social support and depressive symptoms depending on the adolescents' social position. These findings extend Pearlin's Stress Process Model by suggesting that stress processes are socially differentiated rather than homogeneous and provide empirical justification for incorporating Archer's Morphogenetic Approach to explain why similar structural conditions generate different outcomes.

Statements and Declarations

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Potential Competing Interests

No potential competing interests to declare.

Data Availability

Data are available upon reasonable request.

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