

Physical Fighting Among Adolescents in Eastern Ethiopia: A Cross-sectional Study

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Abstract

Objective: To assess the magnitude and factors associated with physical attack and fighting among adolescents in Eastern Ethiopia.

Methods: A community-based cross-sectional study was conducted among 2,424 adolescents in eastern Ethiopia in 2016. Random sampling was used to recruit study participants. Data were collected by trained interviewers using an adapted, structured questionnaire. Descriptive statistics, binary and multivariable logistic regression were performed. Statistical associations were determined using adjusted odds ratio (AOR) at 95% Confidence Intervals (95% CIs) and P -value <0.05 .

Results: Prevalence of physical attack and physical fights was 5.8%, and 26.4%, respectively. Adolescents who attended school (AOR 0.4, 95% CI 0.2-0.9) and who chewed Khat (AOR 0.4, 95% CI 0.2-0.8) were less likely to experience physical attack. Male adolescents were two times more likely to engage in physical fights than female adolescents (AOR 2.4; 95% CI 1.8-3.2). In-school adolescents who attended secondary (AOR 0.4, 95% CI 0.2-0.7) or tertiary level of education (AOR 0.2, 95% CI 0.1-0.7) were less likely to participate in physical-fighting than those with primary level education. Adolescents who had ever engaged in physical work to earn money for food or drink were 1.9 times more likely to be physically attacked compared to those who had not (AOR 1.9, 95% CI 1.0-3.5).

Conclusion: Physical attacks and fights were found to be common experiences of adolescents in eastern Ethiopia. Future research and programs should emphasize preventive health programs for reducing violence and promoting school enrolment and retention.

Introduction

Adolescents (10–19 years) account for approximately 1.8 billion people, approximately a quarter of the world's population, and one-third of the population of sub-Saharan Africa. The period of adolescence has impacts on future adult health, leading to important effects on the economic development and social prospects of a country (1). Investing in adolescent health and wellbeing may therefore benefit health in adulthood. In Ethiopia, adolescents comprise 24.8% of the total population (2). Adolescent physical fighting is an important public health agenda, which contributes to the global burden of disease, however, research evidence on young people as a neglected yet pressing issue (3, 4).

Violence is a global public health concern that has a serious impact on adolescent growth and development, as well as cost implications on health care, social welfare, criminal justice services, and productivity (5). Violence is defined as the intentional use of threatened or actual physical force or power against oneself, another person, or a group or community, which results in or has a high likelihood of resulting in injury, death, psychological harm, poor development, or deprivation (6). Violence causes nearly 1.4 million deaths per year, worldwide (7). Many adolescents have died prematurely due to accidents, suicide, violence, and other preventable or treatable illnesses (8). Globally, female adolescents face different forms of violence depending on their age and marital status. However, both female and

male adolescents are subjected to physical and emotional abuse by those who have power and authority over them, including their peers (9). Addressing preventable physical attacks, fighting, and other forms of violence will have tremendous socio-economic benefits (10).

In many parts of the world, particularly high income countries, injuries and self-harm are common causes of morbidity and mortality among adolescents (3). Yet, in many low and middle income countries, including Ethiopia, research on violent behavior among adolescents is lacking to inform policy and programs decision makers. Therefore, the purpose of this study was to assess the level of physical attacks/violence, fighting, and associated factors among adolescents in eastern Ethiopia. This study provides insight into the levels of and associated factors for these conditions to inform health providers, program planners, researchers, and public health experts working on adolescent health in this region.

Methods

Setting and participants

A community-based cross-sectional study was conducted among adolescents in rural (Kersa) and urban (Harar) Health Demographic Surveillance Sites (HDSS) in Eastern Ethiopia from February 1, 2016 to March 30, 2016. The HDSSs were established in 2007. The Harar HDSS encompasses six sub-districts including approximately 9,000 households with 32,000 people undergoing periodic surveys. The Kersa HDSS is located in the Kersa district of the east Hararghe zone in the Oromia region. Details on the Kersa HDSS have been published elsewhere (11). The study was conducted among adolescents 10–19 years of age who lived in the study area. Adolescent study participants were randomly recruited from 18 sub-districts (six urban and 12 rural). Households with an adolescent were randomly sampled from the HDSS databases. Sub-district name, village name, household identification, and household head names from the database were used to identify locations of selected households in the study area. Adolescents were excluded if they were not willing to participate in the study, seriously ill, or if their parents refused consent.

Dependent variables

Physical attack:

This variable was assessed using the question, “During the past 12 months, how many times were you physically attacked?” For participants who had not been physically attacked, the response was converted to a dichotomous variable, coded as “No incident = 0,” and for those who had been physically attacked at least one time, the response was coded as “Yes = 1.”

Physical fight:

This variable was assessed using the question, “During the past 12 months, how many times were you in a physical fight?” For participants who had not been in a physical fight, the response was converted to a

dichotomous variable coded as “No incident = 0,” and for those participants who had been in at least one physical fight, the response was coded as “Yes = 1.”

Independent variables

Socio-demographic and behavioral variables: Age, sex, schooling (in-school or out-of-school), educational status (grade level), having worked to earn money for food/drink, alcohol consumption, and consumption of the psycho-stimulant Khat plant.

Parental/guardian characteristics: Age, educational status, occupation, family size, and wealth index.

Wealth index: A Principal Component Analysis (PCA) was performed to quantify the wealth-index of households. Household assets (electricity, wall-clock, radio, black/white television (TV), colored TV, mobile phone, refrigerator, chest/deep freezer, electric generator/invertor, washing machine, computer, digital photo camera, non-digital photo camera, video deck, DVD/CD, sewing machine, bed, table, cabinet/cupboard, bicycle, motor bicycle or motor scooter, car or truck, boat with a motor, boat without a motor, and solar source of energy), main source of drinking water, and type and availability of toilet facilities were included in the PCA. Kaiser-Meyer-Olkin (KMO) and Bartlett’s test of Sphericity were used for load and sample adequacy. Correlation-matrix, covariate-matrix and Eigenvalues were used to extract factors. Any anti-image correlation values less than 0.5 were excluded step-wisely. Eigen values greater than 60% were consider as an adequate sample. Finally, nine household assets (bed, DVD/CD, cabinet/cupboard, table, electricity, refrigerator, color TV) were used to rank the wealth-index of adolescents’ households, which were then ranked in quintiles.

Data collection techniques

Data were collected using a structured questionnaire developed by the Africa Research, Implementation Science and Education (ARISE) Network and adapted from the WHO Global school-based student health survey. Adolescents were interviewed by a data collector of the same sex. The data collection tool was comprised of comprehensive variables for assessing adolescent health, including: socio-demographic and socio-economic characteristics, family relationships, substance use (alcohol and Khat), physical attack/violence, and physical fighting. Pretesting was conducted among 5% (n = 120) of the total sample size (n = 2424). Participants in the pretest were excluded from the main study. Training and supportive supervision were provided to data collectors.

Statistical methods

Electronic and paper records were stored at Haramaya University College of Health and Medical Sciences. A standard coding guide, data entry guide, and detailed computer editing specifications were prepared by the research team. Data were double-entered to EpiData (version 3.0.2) software. Then, the data were exported from EpiData to Statistical Package for the Social Sciences (SPSS) (version 23.0) for analysis. Descriptive statistics (frequency, percentage, mean and standard deviations) were calculated. Data were analyzed using logistic regression to determine the relationship between the dependent and independent variables. A total of 16 independent variables (sex, age, residency, currently in-school, school grade level

for in-school adolescents, school grade completed for out-of-school adolescents, engaged in work for food or drink, family size, parents age, occupation, wealth index, Khat chewing, alcohol use, and having physical education class in the school year) were considered in the logistic regression. Factors with a p-value less than 0.25 in the bivariate analysis were included in multivariable model.

Results

The study participants' response rate was 83% (2010/2,424). The mean age was 13.8 (\pm 2.7) years. Sixty-one percent of study participants were early adolescents (10–14 years old), 51.1% were female, and 76.7% attended school during the survey period. In addition, 41.6% were currently in primary school (grades 1–4) and 52.7% lived in an urban area. Almost one-in-five (18.4%) adolescents engaged in physical work to earn money for food and or drink (Table 1). The mean family household consisted of 5.8 (\pm 2.1) members. The majority of households (70.1%) had more than four household members, and 74.2% of adolescents were living with both parents. Male and female parents/guardians who did not have a formal education were 45% and 51.7%, respectively. The mean age of male and female parents/guardians was 56.1 years (\pm 22.8) and 46.2 years (\pm 21.1), respectively (Table 2).

Table 1
Socio-demographic characteristics of the adolescents in eastern Ethiopia (n = 2,010)

| Variable | Categories | n (%) |
|--|---------------------------|-------------|
| Adolescent age (years) | 10–14 | 1229 (61.1) |
| | 15–17 | 543 (27.0) |
| | 18–19 | 238 (11.8) |
| Sex | Male | 982 (48.9) |
| | Female | 1028 (51.1) |
| School enrolment | Yes | 1541 (76.7) |
| | No | 469 (23.3) |
| Residency | Urban (Harar) | 1059 (52.7) |
| | Rural (Kersa) | 951 (47.3) |
| In-school grade level | Primary(1–4) | 641 (41.6) |
| | Primary (5–8) | 527 (34.2) |
| | Secondary (9–12) | 327 (21.2) |
| | Tertiary (college level) | 46 (3.0) |
| Out-of-school grade level | None | 285 (60.8) |
| | Primary(1–4) | 113 (24.1) |
| | Primary (5–8) | 51 (10.9) |
| | Secondary (9–12) | 20 (4.3) |
| | Tertiary (college levels) | 0 (0.0) |
| Engaged in physical work for food/drink | Yes | 370 (18.4) |
| | No | 1640 (81.6) |
| Have you consumed Khat in your lifetime? | Yes | 326 (16.2) |
| | No | 1684 (83.8) |
| Alcohol | yes | 39 (26.4) |
| | No | 109 (73.6) |

Table 2
 Socio-demographic characteristics of adolescent's parents/guardians in eastern Ethiopia (n = 2,010)

| Variables | Categories | n (%) |
|--|--------------------------|--------------|
| Parent/guardian status | Both alive | 1707 (84.9) |
| | Mother alive | 200 (10.0) |
| | Father alive | 58 (2.9) |
| | Both not alive | 34 (1.7) |
| | Do not know | 11 (0.5) |
| Currently living with | Both parents | 1491 (74.2) |
| | Mother alone | 283 (14.1) |
| | Father alone | 53 (1.6) |
| | Male guardian alone | 38 (1.9) |
| | Female guardian alone | 90 (4.5) |
| | By myself | 20 (1.0) |
| | Others specify | 35 (1.7) |
| Father/male guardian educational status | None | 654 (45.0) |
| | Primary (1–8) | 333 (22.9) |
| | Secondary(9–12) | 309 (21.3) |
| | Tertiary (college level) | 156 (10.7) |
| Father/male guardian occupation | Farmer | 768 (48.2) |
| | Merchant | 185 (11.6) |
| | teacher | 17 (1.1) |
| | Government employee | 259 (16.2) |
| | Others | 366 (22.9) |
| Age of father/male guardian (years) | 25–34 | 55 (3.7) |
| | 35–44 | 513 (34.3) |
| | 45–64 | 578 (38.7) |
| | 65+ | 349 (23.3) |
| Educational status of mother/female guardian | None | 787 (51.7) |

| Variables | Categories | n (%) |
|---------------------------------------|---------------------|-------------|
| | Primary (1–8) | 354 (23.2) |
| | Secondary(9–12) | 282 (18.5) |
| | Tertiary | 100 (6.6) |
| Occupation of mother/female guardian | Farmer | 349 (33.1) |
| | Merchant | 309 (18.6) |
| | Teacher | 14 (0.8) |
| | Government employee | 169 (10.2) |
| | Others | 617 (37.2) |
| Age of mother/female guardian (years) | Less than 25 | 22 (1.3) |
| | 25–34 | 349 (21.0) |
| | 35–44 | 757 (45.7) |
| | 45–64 | 296 (71.9) |
| | 65+ | 234 (14.1) |
| Household family member/size | ≤ 4 | 601 (29.9) |
| | > 4 | 1409 (70.1) |
| Wealth index | Lowest | 657 (32.7) |
| | Second | 265 (13.2) |
| | Middle | 274 (13.6) |
| | Fourth | 409 (20.3) |
| | Highest | 405 (20.1) |
| Hunger during last 30 days | Never | 1452 (72.2) |
| | Rarely | 281 (14.0) |
| | Sometimes | 246 (12.2) |
| | Usually | 29 (1.4) |
| | Always | 2 (0.1) |

Physical attack

During the 12 months preceding this survey, 5.8% of adolescents had been physically attacked. Of these adolescents, 4.7% had been attacked once, and the remaining 1.1% had been attacked multiple times. The experience of being physically attacked was higher among female adolescents than male adolescents (Table 3).

Table 3
Factors associated with adolescents physically attacked in eastern Ethiopia (n = 2,010)

| Variable | Category | Physically attacked | | COR(95%CI)- | AOR (95%CI) |
|--|--------------------------|---------------------|------------|-----------------------|----------------|
| | | Yes, n (%) | No, n (%) | | |
| Adolescent age (years) | 10–14 | 72(5.9) | 1157(94.1) | 1.3(0.7–2.5) | 2.2(0.5–9.9) |
| | 15–17 | 34(6.3) | 509(93.7) | 1.2(0.7–2.8) | 2.3(0.6–9.9) |
| | 18–19 | 11(4.6) | 227(95.4) | 1.0 | 1.0 |
| Sex | Male | 44(4.5) | 938(95.5) | 1.6(1.1–2.4)** | 1.5(0.8–2.6) |
| | Female | 73(7.1) | 955(92.9) | 1.0 | 1.0 |
| Residency | Urban (Harar) | 46(4.3) | 1013(95.7) | 1.0 | 1.0 |
| | Rural (Kersa) | 71(7.5) | 880(92.5) | 1.8(1.2–2.6)** | 1.4(0.4–5.3) |
| Currently enrolled in school | Yes | 81(5.3) | 1460(94.7) | 0.7(0.4-1.0) | 0.4(0.2–0.9)** |
| | No | 36(7.7) | 433(92.3) | 1.0 | 1.0 |
| In-school grade level | Primary (1–4) | 45(7.0) | 596(93.0) | 1.0 | 1.0 |
| | Primary (5–8) | 26(4.9) | 501(95.1) | 0.7(0.4–1.1) | 0.7(0.4–1.4) |
| | Secondary (9–12) | 8(2.4) | 319(97.6) | 0.3(0.2–0.7) | 0.4(0.2–1.1) |
| | Tertiary (college level) | 2(4.3) | 44(95.7) | 0.6(0.1–2.6)** | 1.1(0.2–5.2) |
| Engaged in physical work for food /drink | Yes | 36(9.7) | 334(90.3) | 2.1(1.4–3.1)** | 1.9(1.0–3.5) |
| | No | 81(4.9) | 1559(95.1) | 1.0 | 1.0 |
| Household members size | ≤ 4 members | 48(5.1) | 900(94.9) | 1.0 | 1.0 |
| | > 4 members | 69(6.5) | 993(93.5) | 1.3(0.9–1.9) | 1.1(0.6–2.1) |
| Father/male guardian age (years) | 25–34 | 2(3.6) | 53(96.4) | 0.4(0.1–1.7) | 0.7(0.1–3.1) |
| | 35–44 | 25(4.9) | 488(95.1) | 0.6(0.3–0.9) | 0.7(0.4–1.5) |

| Variable | Category | Physically attacked | | COR(95%CI)- | AOR (95%CI) |
|--------------|----------|---------------------|------------|----------------|----------------|
| | | Yes, n (%) | No, n (%) | | |
| | 45–64 | 30(5.2) | 548(94.8) | 0.6(0.4-1.0) | 0.7(0.3–1.4) |
| | 65+ | 30(8.6) | 319(91.4) | 1.0 | 1.0 |
| Wealth index | Lowest | 45(6.8) | 612(93.2) | 1.0 | 1.0 |
| | Second | 19(7.2) | 246(92.8) | 1.1(0.6–1.8) | 1.1(0.5–2.5) |
| | Middle | 17(6.2) | 257(93.8) | 0.9(0.5–1.6) | 1.7(0.5–5.7) |
| | Fourth | 22(5.4) | 387(94.6) | 0.8(0.5–1.3) | 1.7(0.4–7.3) |
| | Highest | 14(3.5) | 391(96.5) | 0.5(0.3–0.9) | 0.8(0.2–3.6) |
| Khat chewing | Yes | 84(5.0) | 1600(95.0) | 0.5(0.3–0.7)** | 0.4(0.2–0.8)** |
| | No | 33(10.1) | 293(89.9) | 1.0 | 1.0 |

****p < 0.05: significant association; COR: Crude Odds Ratio; AOR: Adjusted Odds Ratio**

Ten variables with p-values ≤ 0.25 were included in multiple logistic regression. These independent variables were: adolescent age, sex, residence, currently in-school, school grade level for in-school adolescents, engaged in work for food or drinks, family size, parents age, wealth-index and adolescent Khat-chewing. Two independent variables were significantly associated with being physically attacked in the final logistic regression model. Adolescents who were attending school during the survey were 59% less likely to be physically attacked than adolescents who were not attending school (adjusted odds ratio (AOR) 0.4, 95% CI 0.2–0.9). Adolescents who had ever chewed Khat were 58% less likely to be engaged in physical attack than their counterparts (AOR 0.4, 95% CI 0.2–0.8) (Table 3).

Physical fights

Physical fighting was reported by 26.4% of adolescents. Of these participants, 12.0% had a one-time physical fight, and 14.4% reported that they had experienced two physical fights. In multivariable analyses, sex and grade level (for those in-school) were independent predictors of physical fights. Male adolescents were 2.4 times more likely to be involved in a physical fight than female adolescents (AOR 2.4, 95% CI 1.8–3.2). In-school adolescents who had attended secondary school were 62% less likely (AOR 0.4, 95% CI 0.2–0.7) and tertiary level adolescents were 80% less likely (AOR 0.2, 95% CI: 0.1–0.7) to be involved in physical fights than primary level adolescents (grades 1–4) (Table 4).

Table 4
Factors associated with adolescent physical-fighting in eastern Ethiopia (n = 2,010)

| Variable | categories | Physical-fighting | | COR (95% CI) | AOR(95% CI) |
|--|--------------------------|-------------------|------------|-----------------|----------------|
| | | Yes n(%) | No n(%) | | |
| Adolescent age (years) | 10–14 | 372(30.3) | 857(69.7) | 1.9(1.3–2.6)** | 1.4(0.8–2.5) |
| | 15–17 | 113(20.8) | 430(79.2) | 1.1(0.8–1.7) | 1.1(0.6–1.9) |
| | 18–19 | 45(18.9) | 193(81.1) | 1.0 | 1.0 |
| Sex | Male | 188(19.1) | 794(80.9) | 2.1(1.7–2.6)** | 2.4(1.8–3.2)** |
| | Female | 342(33.3) | 686(66.7) | 1.00 | 1.00 |
| Residency | Urban | 290(27.4) | 769(72.6) | 1.1(0.9–1.4) | 1.8(0.8–4.1) |
| | Rural | 240(25.2) | 711(74.8) | 1.0 | 1.0 |
| Currently in-school | Yes | 414(26.9) | 1127(73.1) | 1.0 | 1.0 |
| | No | 116(24.7) | 353(75.3) | 0.9(0.7–1.1) | 1.0(0.8–1.1) |
| In-school grade level | Primary(1–4) | 199(31.0) | 442(69.0) | 1.0 | 1.0 |
| | Primary (5–8) | 159(30.2) | 368(69.8) | 1.0(0.8–1.2) | 0.8(0.6–1.1) |
| | Secondary(9–12) | 52(15.9) | 275(84.1) | 0.4(0.3–0.6)** | 0.4(0.2–0.7)** |
| | Tertiary (college level) | 4(8.7) | 42(91.3) | 0.2(0.1–0.6)** | 0.2(0.1–0.7)** |
| Engaged in physical work for food /drink | Yes | 98(26.5) | 272(73.5) | 1.0(0.8–1.3) | 0.9(0.6–1.3) |
| | No | 1208(73.7) | 432(26.3) | 1.0 | 1.0 |
| Mother/female guardian education | None | 208(26.4) | 579(73.6) | 1.0 | 1.0 |
| | Primary (1–8) | 106(29.9) | 248(70.1) | 1.2(0.9–1.6) | 1.0(0.7–1.5) |
| | Secondary(9–12) | 65(23.0) | 217(77.0) | 0.8(0.6–1.2) | 0.8(0.5–1.1) |
| | Tertiary (college) | 20(20.0) | 80(80.0) | 0.7(0.42–1.2) | 0.6(0.3–1.1) |

| Variable | categories | Physical-fighting | | COR (95% CI) | AOR(95% CI) |
|--------------|------------|-------------------|-----------|------------------|------------------|
| | | Yes n(%) | No n(%) | | |
| Wealth index | Lowest | 165(25.1) | 492(74.9) | 1.0 | 1.0 |
| | Second | 65(24.5) | 200(75.5) | 0.9(0.7– 1.4) | 0.7(0.4– 1.3) |
| | Middle | 67(24.5) | 207(75.5) | 1.0(0.8– 1.3) | 1.0(0.5– 2.2) |
| | Fourth | 119(29.1) | 290(70.9) | 1.2(0.9– 1.6) | 1.1(0.5– 2.5) |
| | Highest | 114(28.1) | 291(71.9) | 1.2(0.9– 1.5) | 1.2(0.5– 2.7) |

***p < 0.05: significant association; COR: Crude Odds Ratio; AOR: Adjusted Odds Ratio*

Discussion

Being in-school and having ever chewed Khat were associated with reduced likelihood to be physically attacked. For those in school, attending secondary or tertiary level of education had protective effects against physical fighting. Sex was significantly associated with physical fight, with male adolescents two times more likely to engage in physical fights compared to female adolescents.

Reports of physical attack in our study population were 5.8%. This is less than a study conducted in Oman that reported 38.8% (12), and a study in Jordan that reported 26.8% (13). We find a prevalence of physical fighting of 26.4%. This finding is relatively consistent with findings from studies conducted in Ghana (32%) (14), Egypt (31%) (15), Venezuela (31.2%) (16), Malaysia (27.4%) (17) and the Caribbean (28.6%) (18). However, we find lower rates of physical fight compared to studies conducted in Turkey (41.2%) (19), Oman (47.6%) (12), Philippines (50.0%) (20), Chile (40.7%) (21), Jordan (43.3%) (13), Zambia (78%) (22) and also a study conducted in six Western-Pacific Countries ranged from 35–63% (23). Differences in the prevalence of physical attack and physical fight, are likely related to social, cultural, and religious norms, and beliefs variation across countries.

Increased risk for physical fight among male adolescents compared to females is consistent with the literature from many countries (4, 17, 21, 23–27), and finding from eighty eight countries (28). The probable reason for male adolescents being engaged in physical fighting than female might due to the old-fashioned gender-norms. Male perpetrators, aggressive and masculine behavior are accepted by community members that, male adolescents are more engaged in fighting than female to get rid of their status quo (29). Likewise, male's peers having fighting history are also a witness for which is more likely engaged in fighting and violence (30). Being male was one of the statistically significant risk factor for physical fight which may be linked up with elevated psychological distress, and substance use (31).

Furthermore, research evidence on this is very limited in low income countries to reason out why male are more engaged in physical fighting. So research might be needed to examine the association using advanced epidemiological study design.

We noted protective relationships between being in-school and greater levels of educational attainment against physical attack and physical fighting. This is consistent with studies in six Western Pacific countries (23), and finding from eighty eight countries (28), which may be related to structured time at school, enhanced skills for resolution of disagreements, and greater oversight by teachers. In addition, increased physical fight among those who worked for food or drink may be related to social status among their peers. This finding is consistent with a study conducted by Shaikh and his colleagues (2020) has indicated that adolescents who had food deprivation were 1.75 more likely involved in physical fight than their counter parts (32).

We observe that adolescents who ever chewed Khat were less likely to be involved in physical violence. This finding was unexpected as Khat is a psychostimulant chewable green plant followed by many risk taking behaviours, such as alcohol drinking and smoking (17, 33–35). Khat chewing is very common in the study area (36), with devastating consequences and common mental disorders (37–39), which may have association to physical fighting. In addition, adolescents may use Khat to promote concentration on academic (35, 37, 40) or religious studies or worshipping (35, 37, 41) per local customs and beliefs. The association between Khat chewing and physical fighting among adolescents not adequately researched.

Overall, physical attack and fights have important consequences for adolescent psychosocial development, educational attainment, self-confidence, intelligence (42), health (35, 43–45) and physical disability (44). While there remains a paucity of evidence in this area, epidemiological studies in different settings and a systematic review in sub-Saharan African indicates that there is increasing recognition of the impact of violence on adolescent health and wellbeing (45, 46). Further research is needed to determine the prevalence and factors associated with violence among adolescents and to evaluate links between educational and social factors in various settings. Approaches that aim to increase school enrollment and retention and programs to decrease violence should be prioritized in eastern Ethiopia and other similar low resource settings.

The current study has several limitations. With a cross-sectional design, we are unable to demonstrate a causal relationship. In addition, self-reported data may be subjected to participant recall bias, and it is possible that the true prevalence of physical attack, and fight may be higher than these findings.

Conclusions

Physical attack and fighting are common experiences of adolescents in eastern Ethiopia. Gender, school attendance and attainment, chewing Khat, and working for food or drink were important factors related to physical violence. Our findings suggest that research and policy for adolescent health in Ethiopia should focus on community programs to prevent violent behaviour and encourage school enrolment and retention.

Acronyms

ARISE: African Research Implementation Science and Education

AOR: Adjusted Odds Ratio

CI: Confidence Interval

HDSS: Health Demographic Surveillance Sites

PCA: Principal Component Analysis

WHO: World Health Organization

Declarations

Ethical considerations:

The study protocol was reviewed and ethical approval by the Institutional Health Research Ethical Review Committee (IHRERC) of College of Health and Medical Sciences at Haramaya University. The study was conducted in accordance with the Declaration of Helsinki's. Informed consent was obtained from parents/LAR involved in the current study. An assent was obtained from adolescents involved in the current study. Confidentiality of the information was kept and maintained among others by avoiding personal identifiers and password locking in computer with stored data.

Consent for publication:

Not applicable

Competing Interests:

All authors have declared no competing interests.

Availability of data and materials:

The participant de-identified data used for current study will be available upon submitting reasonable request from the corresponding author (AS) in either SPSS or Stata format and as per the permission obtained from senior project principals (YD, YB, NA, and WWF).

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Authors' contributions:

YD, YB, NA, and WWF had substantial contribution to conception and acquisition of data of this research. AS, NA and CC carried out the data analysis and interpretation of the findings. AS drafted the manuscript. All authors revised the paper critically for important intellectual contents. All authors read and approved the final manuscript.

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