Abstract

Background: The current study investigated the impact of being bullied during childhood on lower academic performance among secondary school students in Dar es Salaam, Tanzania. We hypothesized that secondary school students who had been bullied during childhood could have lower academic performance compared to those who had not been bullied.

Methods: This was a cross-sectional, community-based study of secondary school students that was conducted in randomly selected schools in Dar es Salaam, Tanzania between July 2022, and December 2022. Each participant was contacted and informed about the purpose of the research, confidentiality issues, and reporting of the results. A multistage cluster sampling technique was employed to obtain the required number of study participants. The Adverse Childhood Experiences (ACE) questionnaire and the standardized mathematic test were used to measure the variables under investigation in the study. Pearson correlation analysis was used to analyze the correlation between variables (Bulled during childhood and low school performance)

Results: A sample of 3193 secondary school students was recruited in this study, of which 1650(51.7%) were females and 1543(48.3%) were males. The differences in scores between male and female students demonstrated statistical significance with P-value =0. 000. The number of respondents who reported being bullied during childhood was 1,318 (42%). We found that the experience of being bullied during childhood was significantly associated with lower academic performance ($\beta = .079, p = < .0001$).

Conclusion: Being bullied during childhood was positively associated with lower academic performance. Being bullied during childhood may be a predisposing factor for lower academic performance, as previously reported.

Keywords: Lower academic performance; Bullied; Secondary school students; Tanzania.

Introduction

Mental well-being is a fundamental component of the World Health Organization (WHO) definition of health, and the core of mental health action with the principle “no health without mental health” was globally accepted [1]. The mental well-being of adolescents is a crucial issue affecting the lives of both adults and young people [2]. Globally, mental health problems account for 13% of the total burden of disease, and 31% of all years lived with disability [3]. For most mental health disorders their first onset occurs in childhood or adolescence with the severe mental disorders typically preceded by less severe events, thus leading to failure to detect and treat for years [4]. Approximately half of those with mental health disorders first experience the corresponding symptoms at the approximate age of 14 years [5]. These early onsets of mental disorders have accounted for a variety of adverse consequences, such as disruption of education and early career development of affected individuals [6]. Early-life adversities are known to affect personal psychological resources and to have a long-term influence on health and well-being during adulthood [7, 8]. Among adverse experiences, bullying during childhood has been identified as having a possible long-term impact on the health and well-being of people who experienced it [8]. Bullying is defined as aggressive behaviors that are repeated and involve a power imbalance favoring the perpetrator [9, 10].

Globally, bullying is quite common during childhood. In a 40-country survey, 26% of adolescent participants reported involvement in bullying during childhood [11]. A recent national survey in Japan reported that 32-51% of boys and girls at elementary and junior high schools reported that they were...
bullied during childhood [12]. In Africa, anecdotal evidence shows a significant increase in the prevalence of bullying during childhood with a prevalence rate of 21–61% in South Africa [13], 78% in Malawi [14], and 59% in Ghana [15]. Several studies have suggested that the experience of being bullied during childhood has a unique impact on lower academic performance [8, 16]. A previous study in Japan investigates the long-term impact of being bullied during childhood on current lower academic performance in adulthood among Japanese students and found that the experience of being bullied during childhood was significantly associated with lower academic achievement[16].

Other studies also showed that being bullied during childhood was strongly associated with mental disorders in adolescence and adulthood [17-19], as well as with poor health, poor educational status, financial problems, and deteriorated social relationships in adulthood [20]. Some studies reported that the experience of being bullied during childhood was associated with frequent victimization in early adulthood by colleagues or supervisors in the workplace [21, 22]. Previous studies have reported that personality is associated with the experience of being bullied during childhood [23]. It seems that the experience of being bullied during childhood is consistently associated with poor mental and physical health, as well as lower academic performance. However, due to limited data on the impact of being bullied on lower academic performance in developing countries, there remains a considerable gap in research that needs to be filled to provide an understanding of the scope and nature of the psychological effects of bullying as the findings in western countries may not necessarily be applied to the Tanzanian context. With no anti-bullying policy in place within Tanzania, in addition to the high prevalence of bullying reported [15], there is therefore the need for a contextually relevant study to explore the various lower academic performance that may be associated with bullying.

This study assessed the long-term effects of an experience of being bullied during childhood on lower academic achievement in a large sample of secondary school students. The findings of this study could help in developing proactive antibullying intervention programs for schools.

Methods

Study design

A cross-sectional study of secondary school students was conducted using a random selection of secondary schools in Tanzania. A multistage cluster sampling technique was employed to obtain the required number of study participants.

Study participants

The target population comprised male and female students aged 13–24 years. A total of 3193 students participated in this study, 1543(48.3%) were male and 1650(51.7%) were female as shown in Table 1.

Measures

Two questionnaires per student were used to measure the different variables under study. An adverse Childhood Experience (ACE) questionnaire was used to measure the experience of being bullied during childhood and a Standardized mathematic test was used to measure the academic performance of the sample students.

The Adverse Childhood Experiences

The Adverse Childhood Experiences questionnaire consisted of 38 items that assessed exposure to 10 types of ACE, including being bullied. The items were adapted from the Childhood Trauma Questionnaire (CTQ) [24]. The CTQ was developed by Bernstein and Fink [24]. Through the CTQ, the participants were to rate the frequency of abuse and neglect events that occurred during their childhood or when they were growing up. The rating scale was from 0-never true to 5-very often true. The CTQ was a 70-item retrospective questionnaire, and the participants were to rate on frequencies. Sometimes, the scale can be shortened, and the shortened CTQ assesses emotional and physical neglect, physical, sexual, and emotional abuse, violet including being bullied, and can have 28 items, depending on exploratory and confirmatory factor analyses. The CTQ is suitable for adults and adolescents aged 12 and over. Additionally, the CTQ is a self-report inventory providing screens of histories of childhood abuse and neglect and violets that are brief, reliable, and valid [24]. Participants responded to several statements about childhood events, which are arranged according to their frequency on a 5-point Likert scale. It usually did not take more than 10 min to complete the questionnaire. CTQ items assessed exposure to ten types of ACE, including exposure to neglect (i.e., physical, and emotional), abuse (i.e., emotional, physical, and sexual), and household challenges (i.e., being bullied, household mental illness, household substance abuse, household physical violence, parental separation/divorce, and incarcerated family members) before age 18. Psychometrically, the CTQ is appropriate in community samples with the best test-retest reliability [25], displaying convergent and discriminant validity [25]. Test-retest reliabilities ranging from 0.79 to 0.86 and internal consistency reliabilities ranging from 0.66 to 0.92 have been displayed by the CTQ [26].

Standardized mathematic test

The standardized mathematic test was used to measure the academic performance of the sample students. Standardized math exams have been used widely in previous high-quality research papers in China to measure academic performance as an outcome variable [27,28,29,30,31]. In our study, the academic performance outcome is based on student math score, which is measured during the survey using a 35-minute-long mathematics test. The mathematics test was designed by

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trained psychometricians. The math test items for the end line and baseline tests were selected from the standardized mathematics curricula for primary school students in Tanzania. To confirm our test was reliable, the content validity of these test items was checked by multiple experts. The psychometric properties of the tests were then validated using data from extensive pilot testing to ensure good distributional properties. In the analyses, we normalized mathematics performance scores.

The research team collaborated with the local education bureau and primary school teachers to design a math test based entirely on the mathematics curriculum of Tanzania primary schools. However, to eliminate the risk of bias from teachers who might prepare students for the test in advance, the test design was limited to teachers whose students were not participating in the survey. Students were given 35 minutes to complete the math test (which included 35 items), throughout which the research team closely monitored the sample students on time and to avoid cheating. After students completed the test, the scores were standardized for analysis. Standardizing was completed by scaling raw scores into z-scores, which were calculated by subtracting the mean score from the raw score, then dividing the difference by the standard deviation of the distribution of scores from all students in each of the three grades.

Sampling technique
A multistage cluster sampling technique was employed to obtain the required number of study participants. A sampling frame from the list of students from randomly selected schools was prepared and used to draw up the sample. From the sampling frame, study units were sampled through the simple random method until the required sample was obtained.

Study variables
There are two significant variables in this study: the independent variable is being bullied during (The Adverse Childhood Experiences (ACE), while the dependent variable is low academic performance (Standardized math test).

Statistical analysis
Statistical package for social sciences (SPSS) version 20.0 (SPSS, Chicago IL, USA) for Windows was used in performing statistical data analysis. Descriptive statistics like mean (+Standard deviation) and ranges on one hand were calculated on continuous variables. On the other hand, categorical variables, proportions, and frequency tables were used to summarize the information.

Multivariate logistic regression analysis was used to determine the level of low academic performance among students, while the level of significance was considered as p< 0.05.

Ethical consideration
Ethical consideration Ethical clearance was obtained from the review committee from Hubert Kairuki Memorial University. A formal letter was submitted to the respective educational district offices and subsequently to head teachers at secondary schools where the study was conducted. Written permission from the parents of the respondents was obtained a day before the time of data collection. Oral and written permission from the schools and the respective study subjects was obtained. The study was explained to the subjects. Its purpose and its confidentiality were explained, and the subject’s consent to participate in the study was assured before completing the questionnaire.

Study limitation and delimitation
This study covered a few students from Dar es Salaam Tanzania. This might bring difficulty in the generalization of the results. The researcher increased the sample size to foster variability of the subject which might prove the legacy of generalizing results.

Results

The study samples
The sample consisted of 3193 students. of which 1650(51.7%) were female and 1543(48.3%) were male. Out of 3193 students, 2318(72.6%) experienced being bullied during childhood.

Table 1: Study sample.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>N (%)</td>
<td>1543(48.3)</td>
<td>1650(51.7)</td>
<td>3193(100.0)</td>
</tr>
</tbody>
</table>

Correlation analysis between bullied and gender
The correlation analysis in table 2 shows a strong correlation between being bullied during childhood and gender (r=0.13, p< 0.01).

Table 2: Correlation analysis among students (gender) and bullied during childhood.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Bulled</th>
<th>Gender of the students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullied</td>
<td>1</td>
<td>.130**</td>
</tr>
<tr>
<td>Gender of the students</td>
<td>.130**</td>
<td>1</td>
</tr>
</tbody>
</table>

Correlation between low academic performances, age, and gender of the students
Table 3 below shows a strong positive correlation between low academic performance and gender (r = 0.51, p< 0.001).

Table 3: Correlation analysis of low academic performance by gender and age groups.

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low academic performance</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of the Students</td>
<td>.035</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender of the students</td>
<td>.001</td>
<td>-195**</td>
<td></td>
</tr>
</tbody>
</table>

** indicates significance at the 0.01 level (2-tailed)

The average low academic performance scores
The average low academic performance of students was (22.12 ± 4.734).

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Linear regression analysis between being bullied during childhood and low academic performance

A simple linear regression model (Table 6 below) was calculated to predict being bullied during childhood b=0.51, (998) 35.08, p<0.001. A significant regression equation was found (F (1,998)) = 359.893, p<0.001, with R2 of 0.265. Approximately 26% of the variance in bullied during childhood can be explained by low academic performance. Moreover, low academic performance can be predicted based on being bullied; b=-0.86, (998) 41.05, p<0.001. A significant regression equation was found (F (1,998)) = 7.36, p<0.001, with R2 of 0.007. This means that 0.6% of the variance is in low academic performance. Can be explained by bullied during childhood.

Table 5: Correlation between being bullied during childhood and low academic performance.

<table>
<thead>
<tr>
<th>Variables</th>
<th>M ± SD</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullied</td>
<td>27.6 ± 4.2</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Low Academic Performance</td>
<td>10.4 ± 2.3</td>
<td>.515**</td>
<td>-.086**</td>
</tr>
<tr>
<td>Gender of Participants</td>
<td>.001</td>
<td>-.195**</td>
<td>-</td>
</tr>
</tbody>
</table>

Dependent Variable: psychological distress
Predictors: (Constant), Emotional neglect

Prevalence of low academic performance in average scores among students

The average score of low academic performance among students was 25.84 with the minimum score being 10 and the maximum score of 50.

Table 6: Linear regression analysis between being bullied during childhood and low academic performance.

<table>
<thead>
<tr>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Df</th>
<th>F</th>
<th>T</th>
<th>Beta</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>.265</td>
<td>.264</td>
<td>1998</td>
<td>359.893</td>
<td>7.37</td>
<td>.515</td>
<td>.000</td>
</tr>
<tr>
<td>.007</td>
<td>.006</td>
<td></td>
<td>35.083</td>
<td>41.05</td>
<td>.86</td>
<td>.001</td>
</tr>
<tr>
<td>Gender of participants</td>
<td>.001</td>
<td>-.195**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prevalence of low academic performance in average scores among students

Table 7: Prevalence of low academic performance in average scores among students.

<table>
<thead>
<tr>
<th>Mean</th>
<th>Mode</th>
<th>STD Deviation</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.84</td>
<td>40</td>
<td>9.128</td>
<td>10</td>
<td>50</td>
<td>3193</td>
</tr>
</tbody>
</table>
formancevery between males and females. The findings that the prevalence of low school performance was higher among male participants than female participants is contrary to what has previously been reported that female participants were more likely to develop psychological distress than their male counterparts [33, 34]. The reason for the underlying vulnerabilities and gender influence on participants with low school performance is unclear, and this requires further investigation. Although low school performance was the most common among students who experienced bullying during childhood, no psychologically distressed participants sought professional treatment. This observation may be attributed to the lack of awareness and poor knowledge regarding whether being bullied during childhood needs professional attention. This calls for urgent preventive measures to reduce the occurrence of being bullied during childhood to reduce the potential adverse consequences of low school performance. Previous studies have demonstrated a positive and significant relationship between the experience of being bullied during childhood and low school performance [16, 35]. This finding agrees with our study, which found that being bullied during childhood was statistically significantly associated with low school performance. Parenting style plays a crucial role in a child’s social, cognitive, and emotional development. A negative parenting style involving being bullied during childhood may result in low school performance [36].

Being bullied during childhood have negative impacts and is believed to occur when the child internalizes the harsh treatment, including the negative messages from parents, teachers, students, and/or caregivers [37]. This results in insecurities, and the child develops maladaptive interpersonal schemas, which lead to low school performance [38]. Children in such situations tend to believe that they are worthless and that the world is unsafe and perceive everybody as abusive [39]. Those who have experienced being bullied during childhood tend to be more self-conscious and isolate themselves from others [40]. A study done in Croatia about the relationship between being bullied during childhood and low school performance and its related adjustment in adulthood showed that almost two-thirds of respondents reported being exposed to bullied in their earlier life [41]. As has been demonstrated in this study similar other studies have shown stronger negative relationship between being bullied during childhood and low school performance [42].

There are some limitations of the study that should be noted: first, the cross-sectional study design does not allow for the establishment of a causal relationship; therefore, only the association between being bullied during childhood and low school performance was established in this study. Second, the study participants included students from randomly selected schools; therefore, the results cannot be generalized to the Tanzania population. Third, additional consideration should be given to the tendency of participants to under or over-report incidents of maltreatment. Thus, the results must be interpreted with caution. Being bullied during childhood was revealed to most students, and the rate of exposure reported in this study is slightly higher as compared to another study.

**Conclusion**

This study concludes that there is a significant relationship between being bullied during childhood experience and low school performance. Findings from these studies demonstrated that bullied during childhood exists and has negatively affected school performance among Tanzanian students. The purpose of these studies was to build upon the extant literature concerning being bullied during childhood experience and its association with low school performance. The results demonstrated that being bullied during childhood experience is prevalent in our setting and statistically significantly positively affected low school performance among Tanzanian students. The understanding of the interrelatedness of bullied during childhood experience with low school performance should be considered in the design of studies, treatments, and programs to prevent bring bullied during childhood as low school performance.

Urgent preventive measures aiming at reducing the incidence of bullying during childhood are necessary to lessen the incidence of low school performance. It is urged that urgent preventive measures aiming at reducing the occurrence of bullied during childhood are necessary to be undertaken to reduce the incidence of low school performance among Tanzanian students. This can be achieved through educational efforts that highlight the negative effects of being bullied during childhood. Also, parents/caregivers and teachers need to be educated about the potential negative consequences of bullied experiences to raise awareness among them as a means of reducing low school performance.

**Recommendations**

Home and school environmental situations are expected to be an ideal and the best fit for safety for a child’s growth and development both physically and psychologically. Situations have proven different that careful measures are to be undertaken by parents/guardians and other closely related people who come close to the child’s growing environment. That is so because studies have shown that bullied experience is the interplay of several variables including the family environment in which children are brought up, parent-child relationships, and methods of bringing up children. Social organizations protecting the child should be aware of the impact caused by being bullied occurring at home and school. They must properly plan for an intervention involving the parents, guardians, and other people who come close to children’s psychological and physical growth. This study has included only small parts of Tanzania A study that covers a very large area, and a big population size is recommended to include the wider part of the country for worth-
while generalization of the results.

**Declarations**

**Ethics approval and consent to participate.**
All participants were given information about the study and asked for their voluntary participation. School Teachers were informed about the purpose of the study and ensured that their answers would only be used anonymously for research purposes voluntarily. Informed consent was sought from each participant before being enrolled in the study. Permission to conduct the study was also obtained from respective school authorities.

**Consent to publish.**
Not applicable

**Availability of data and materials**
Not applicable

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**Competing interests**
The authors declare that they have no competing interests.

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