Adverse Childhood Experiences and Associated Correlates among Adolescents at a Rural Private High School in Kenya

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ABSTRACT

The study aimed to examine the relationship between Adverse Childhood Experiences (ACEs) and associated correlates among adolescents at a rural private high school in Kenya. A cross-sectional research design was used, and 595 adolescents aged between 13-18 years were selected. Stratified random and simple random sampling methods were used to attain the sample size. Socio-demographic questionnaires, the ten-item short version of ACE, and Strengths and Difficulties (SDQ) questionnaires were used in data collection. Descriptive and inferential statistics were used to analyze the data. Bivariate analysis using the chi-square test found that ACEs were significantly associated with emotional and behavioural problems, with statistical significance at $P < 0.05$. Multivariate analysis revealed that students in forms one and two were at a higher risk of having ACEs. Higher ACE risk was also found among children living in a single-parent family setup. Being Muslim and exhibiting normal emotional and peer problems were found to be protective factors, as they were associated with lower levels of ACEs. This study was limited to one sub-county; thus, the study findings cannot be generalized to the whole country. Future studies can target students from high economic backgrounds and urban areas to assess the prevalence of ACEs and their impact on associated correlates.

INTRODUCTION

It has been shown that Adverse childhood experiences (ACEs) are common among adolescents worldwide (World Health Organization, 2015; Carlson et al., 2020; Soares et al., 2016; Maurya & Maurya, 2023). ACEs comprise physical, emotional, sexual abuse; physical and emotional neglect; and family dysfunctions such as substance abuse, parental divorce or separation, and domestic violence, which are directed at a minor (Isohookana, Riala, Hakko, & Räsänen, 2020). A combination of different risk factors across individuals, family backgrounds, socio-economic backgrounds, and parental backgrounds is associated with one or more ACEs (Thornberry, Matsuda, Greenman, et al, 2014).

Studies have shown that ACEs are associated with emotional and behavioural problems (EBPs) among children and adolescents (Hunt, Slak & Berger, 2017; Maurya & Maurya, 2023). Emotional problems comprise anxiety, depression, and social interaction difficulties, while behavioural problems include conduct problems and attention hyperactivity disorders (Saleem & Mahmood, 2013). ACEs have been found to cause stress reactions in children, and when this is prolonged over time, toxic stress affects the normal mental and physical development of children and is linked to various negative outcomes in adulthood (Moore & Ramirez, 2016; Bethell, Davis, Gombojav, et al., 2017). Previous studies have found that ACEs negatively contribute to poor health outcomes, drug abuse, suicide, depression, obesity, poor physical health, lower educational attainment, poverty, and unemployment (Metzler, Merrick, Klevens, et al., 2017; (Lu and Yunyu, 2019). Moreover, ACEs have been found to contribute to impulsivity and aggression as well as behaviour problems such as peer problems and substance use (Perez, Jennings, Piquero, & Baglivio, 2016).

A relationship between high scores of ACEs with school violence victimization and suicide (Meeker, O'Connor, Kelly, et al.; UNICEF, 2019) was found. Experiencing more ACEs and having high scores of ACEs were also

associated with health problems and health-related behaviours, for example, sexual problems, dissociation, and sleep disorders (Rebicova, Veselska, Husarova, et al., 2019; Hughes, Bellis, Hardcastle, et al., 2017). Gender differences have been noted in the reporting of EPBS. Female participants experience high levels of anxiety compared to males, while male participants report higher rates of behaviour/conduct problems than females (Lu and Yunyu, 2019). El Koumi et al. (2012) found a high prevalence of EBP among vulnerable adolescents in schools due to exposure to neglect, poverty, exploitation, and lack of care and love from parents. The prevalence of ACEs was also found to be higher among disadvantaged populations such as families experiencing drug misuse, parental incarceration, and homelessness (Roos, Mota, Afifi, et al*.,* 2013).

Most ACE studies in Kenya have mainly focused on measuring the prevalence of specific adverse experiences and their relationship to mental health. Especially in special populations such as children or adolescents affected by HIV/AIDS, children staying in care centers, sexually abused hospitalized children and adolescents, child laborers, and orphans (Nyagwencha, Munene, James, Mewes, and Barke, 2018; Magai and Koot, 2019; and Mutavi, Obondo, Kokonya, Khasakala, Mbwayo, et al., 2018). Karsberg and Elklit (2012), in a study among rural Kenyan high school students aged 13-20 years, found that most of the students had been exposed to ACEs either directly or indirectly: boys (96.3%) and girls (91.8%). Therefore, there is a gap in research among vulnerable adolescents in private high schools on ACEs and their correlates. This study sought to fill this gap.

METHODS

A cross-sectional design was carried out in a rural high school in Kiambu Sub-County among 595 students. The study population comprised both boys and girls, aged between 13 years and 17 years old, in grades 9 to 12, and was representative of all ethnic groups in Kenya. They hailed from vulnerable family backgrounds characterized by parental separation, parental death (one or both), and domestic violence. Some of the students reported having experienced emotional/physical neglect due to poverty, and some sexual or physical abuse. The exclusion criteria were those above 18 years.

Measures

a) Socio-demographic information: The researchers developed the socio-demographic questionnaire that captured participants' age, sex/gender, level of education, religious affiliation, place of residence, and family setup.

b) Short Screening ACE Questionnaire: ACEs were collected by a 10-item screening version of the ACE that covers 10 dimensions with a single-item questionnaire developed by Felitti, Anda, Nordenberg, Williamson, Spitz, & Edwards (1998). Internal consistency of the 10-item measure and construct validity are good, showing high correlations with mental and physical health measures and childhood trauma inventories in a Brazilian cohort study that examined ACE prevalence and related factors among 3951 adolescents aged 18 years (Soares et al. 2016). In Kanana, Molebatsi, Obondo, and Kuria (2018) descriptive cross-sectional design among 134 patients aged 18 years and above in a referral psychiatric hospital in Kenya, the ACE questionnaire was found to have good concurrent validity ($r = 0.76–0.88$, $p \leq 0.001$) and good internal consistency ($\alpha = 0.68–0.88$). The scale was used to assess sexual and physical abuse, physical and emotional neglect, domestic violence, parental separation, and parental death. The resonances are scored on a four-point Likert scale that comprises Never = 0; Once = 1; Two times = 2; Three times = 3; Four or more times = 4. Each ACE is evaluated separately, followed by a total ACE score whereby each affirmative answer is worth one point; thus, the total score could vary from 1 (least exposed to ACEs) to 7 points, an indicator of being exposed to all ACEs. An ACE score of 4 and above reflected a higher level of exposure to traumatic events.

c) Strengths and Difficulties Questionnaire (SDQ): The Strengths and Difficulties Questionnaire (SDQ) youth version, developed by Goodman Robert (2002), was used for measuring (EBPs). Though the version has been developed for 11 to 17 years, it has also been used for youth up to 18 years with good results (Bøe, Hysing, Skogen, & Breivik, 2016; Arman, Amel, & Maracy, 2013). In assessing psychiatric problems among Japanese children and adolescents, SDQ was found to have a sensitivity of 85% and specificity of 80% (Suzuki & Kita, 2016). In a cross-sectional study conducted among 137 adolescent form 1-3 students in Nairobi, Kenya, aged 14-19 years, the SDQ was found to have a confidence level of 95% and a precision of 5% (Wambua, Obondo, Bifulco & Kumar, 2018).

The questionnaire consists of 25 items with 5 subscales of 5 items each assessing emotional problems, peer problems, conduct problems, hyperactivity problems, and prosocial behaviour. The items on the SDQ were scored on a three-point Likert scale that comprises Not True = 0, Somewhat True = 1, and Certainly True = 2 for each of the five scales. The score ranges from 0 to 10 if all five items were completed. To calculate total difficulties, summaries for emotional problems, conduct problems, hyperactivity, and peer problems are added up and rounded to the nearest whole number after recording the reversed items. A higher score on the prosocial subscale reflects strengths. Scores for prosocial behaviour range from 6-10 (normal), 5(borderline), and 0-4 (abnormal). A higher score on the other four subscales indicates difficulties. Scores for total difficulties range from 0-15 (normal), 16-19 (borderline), and 20-40 (abnormal). A higher score reflects more problems. Students with a score of 16 and above (borderline and abnormal) were considered for further intervention (counselling and psychiatric review).

Data collection procedure

The school principal was approached to explain the aim of the study and the process of data collection. After permission was granted by the head teacher, a day was set aside when the researcher assembled all students in the school hall and explained the nature of the study. This was done in the afternoon after their lessons. Students willing to participate in the study were to be within the age range of 13-18 years. Students below 18 years were given the assent document, while those above 18 years were given the consent document. The researcher responded to respondents' questions. Participants were assured of confidentiality and were informed of voluntary participation, and an explanation of why their names would not be used was given. For those who agreed to participate, study numbers rather than names were given to them. Research participants were also assured of further psychological support in case they felt distressed.

The assistants distributed the assent and consent forms first. Once the assent and consent forms had been signed and collected, questionnaires were distributed. The researcher and the assistants remained in the hall to answer any questions that arose. Once the participants completed filling out the questionnaires, they were directed to deposit them in two boxes that had been placed at the front of the hall. Once all the students had dropped their questionnaires in the boxes, they were taken by the researcher for safekeeping, data entry, cleaning, and analysis.

Data Analysis

Data was analyzed using SPSS version 21. Both descriptive and inferential analyses were done. In descriptive statistics, totals and percentages were used, while in inferential statistics, chi-square tests and multivariate analysis were done.

RESULTS

A total of 622 self-administered questionnaires were given out. Of the 622 returned questionnaires, nine were returned unanswered (1.4%), another nine were spoiled, and 9 (1.4%) others were of students above 18 years who were not included in the final analysis. A total of 595 (96.9%) questionnaires were analyzed. The mean was 4.01 (95% CI 3.86 - 4.16) and SD 1.891. The Cronbach's alpha of the Short Screening ACE Questionnaire was .78, while that of the SDQ was .75

Social Demographic Characteristics

The socio-demographic characteristics of respondents included in the analysis are shown in Table 1**.** Most respondents (62.4%) were aged between 16 and 17 years, and only 37.6% were between 13 and 15 years. Concerning gender, the respondents were distributed equally, with males forming 50.1% and females at 49.9%. In terms of level of education, the fourth form (grade 12) had the least at 10.9%. Those with both parents were equal to those who lived with a single parent, while half of the participants belonged to the protestant religion.

At the bivariate level, using the chi-square test comparing ACE and social demographic characteristics, different constituents of emotional and behavioural problems, and finally, emotional and behavioural problems or total difficulties. The following were found to be associated with ACEs and were statistically significant at $P < 0.05$:

religion ($p < 0.001$), family organization ($p < 0.001$), emotional problems ($p < 0.001$), conduct problems ($p = 0.001$), Peer problems ($p < 0.001$), and finally Total difficulties ($p < 0.001$) (as shown in Table 2).

A multivariate analysis was carried out to find out the variables associated with ACEs. There was evidence of an association between ACEs and the level of education. Form four was the reference group. The odds of having higher ACE risk among form ones (grade 9) were 2.873 (95% CI 1.500 -5.503), P 0.001. Among the form two (grade 10) students, the odds of having higher ACE risks were 2.048 (95% CI 1.070-3.920), P=.030. Finally, among the form three (grade 11), the odds of having higher ACE risks were 2.410 (95% CI 1.249 -4.647), P=.009. There was also evidence of an association between higher risks of ACEs and certain family organizations. In children living with both parents, the odds of having higher ACE risk were 3.719 (95% 1.718 - 8.048), P=.001. For the children living with single parents, the odds of having higher ACE risk were 6.494 (95% 2.985-14.130), P<.001. The odds of having higher ACE risk among children living with their grandparents were 5.692 (95% CI 1.870-17.320), P=.002. Living in an orphanage was the reference. There were protective factors identified. Being a Muslim was associated with lower levels of high-risk ACEs, odds .154 (95% CI .067-.352), P<0.001. Students with non-clinical emotional problems were also associated with a lower risk of ACEs odds .599 (95% CI .318 1.131), P=.114. Having normal peer difficulties was associated with lower levels of ACE, with the odds of having a high risk of ACE being .331 (95% CI .145-.754), P=.008 among students aged between 16 -17 years.

DISCUSSION

The current study sought to find out the relationship between ACEs and their correlates among adolescents at a rural private high school in Kenya. Bivariate analysis using a Chi-square test found that ACEs were correlated to EBPs or total difficulties ($p < 0.001$). These findings corroborate those of Rebicova, Veselska, Husarova, et al. (2019), who found that adolescents with three or more ACE scores reported more EBPs compared to those with one to two ACE scores among 341 adolescents aged 10–16 years in Kosice, Slovakia. Findings by Meeker, O'Connor, Kelly, et al. (2021) also confirm the current study's findings. In their study on the impact of adverse childhood experiences on adolescent health risk indicators among a community sample size of 1,532, higher scores of ACEs were associated with EBPs such as school violence victimization (57%), suicide attempt (76%), and an increase in health risk indicators.

Lower levels of education were positively associated with ACEs. P=0.031. The odds of having higher ACE risk were among grade 9 (P=0.001) and grade 10 (P=.030). These findings were consistent with a study conducted in the Western region of Kenya, whereby 67% of adolescents had prior experience of abuse before admission to a learning institution (Morantz, Coleb, Ayaya, Ayuku, & Braitstein, 2014). Similar findings have also been reported by Bakoula et al. (2010) and Armand et al. (2012), who found EBPs, total difficulties, and hyperactivity to be higher among younger adolescents. We can assume that it is possible that the students joined the school with previous ACEs. Also, other studies have found that externalizing problems (hyperactivity problems) decrease with an increase in age (Merikangas et al., 2012). However, current findings are inconsistent with Lien, Green, Welander-Vatn, and Bentness's (2011) Norway study, which found lower EBP scores among younger adolescents and higher EBP scores among older participants. In a Swiss epidemiological study among adolescents aged 11-16 years old, older adolescents (16 years) presented with higher ADHD and externalizing behaviours than younger ones (León, Felipe, Polo, Fajardo, 2015).

Some studies have found single parenthood a risk factor for the maltreatment of children (WHO, 2013; Pelton, 2015; Atwoli, Ayuku, Hogan, et al., 2014). These findings are consistent with our study, whereby multivariate analysis found the odds of having higher ACE risk were among children living with single parents (6.494, P<.001). Meinck, Cluver, Boyes, and Ndhlovu (2015) found that the risk of abuse among 13-19-year-olds was associated with extreme poverty, inconsistent discipline, family conflict, and living with caregivers. Inconsistent discipline and poverty in a single-parent family structure might have contributed to the significant levels in the current study.

However, current findings are inconsistent with other previous studies that found the relationship between ACEs and total difficulties to be high among orphaned adolescents (Biswas & Rao, 2011; Seyf Hashemi et al., 2012;

Rahman, Mullick, & Pathan, 2012; Sg, Kumar, Ramgopal, & Dandona, 2016; Simsek, Erol, Oztop, & Münir, 2010).

A study by McCormick, Wesley & Carroll, Timothy & Sims et al. (2018) found bivariate correlations that showed a significant relationship between ACEs and all religious/spiritual struggles among young people with prior ACEs. Findings from the current study revealed a significant relationship between ACEs and religion ($p < 0.001$). Being Muslim was associated with lower levels of ACEs (odds = .154, $P < 0.001$). Muslim communities seem to provide friendship, support, and opportunities for development that help children build resilience and protect them from the negative impacts of ACEs. These findings corroborate those of Fischer, Peter & Ai; Amy & Aydin; Nilüfer & Frey; and Dieter & Haslam (2010), who reported that both Muslims and Christians are disposed to ACEs, but each religious identity provides different coping strategies. Fischer et al. (2010) study hypothesized that when confronted with a stressful life event, Muslims were more likely to adopt interpersonal (collective) coping strategies (such as seeking social support or turning to family members), while Christians were more likely to engage in intrapersonal (individualistic) coping mechanisms, such as cognitive restructuring or reframing the event.

Implications for Policy and Practice

Findings from the study recommend screening all new students in learning institutions for ACEs, as this would allow for early detection of EBPs that might have negative effects on a child's or adolescent's development. Due to the damaging effects of ACEs on children and adolescents, there is a need to design and implement trauma-focused interventions that are specific and timely in learning institutions by the Ministry of Education. The government, schools, hospitals, and other non-governmental agencies should step up and raise awareness on the negative impact of ACEs since prevention is better than a cure.

CONCLUSION

Child and adolescent abuse is common in most countries, although its prevalence varies from one country to another. The study provided evidence that there is an association between ACEs and their associated correlates. Students who were in lower grades and from single-parent family setups were at higher risk of ACEs; however, those from the Muslim religion who had non-clinical peer and emotional problems were at a lower risk for ACEs. Unfortunately, many children and adolescents are exposed to various ACEs, while in reality, ACEs can be easily prevented. There is a need for schools, health sectors, and families to adopt strategies that can help reduce the prevalence of ACEs among children. This study was conducted in one sub-county and among adolescents from vulnerable backgrounds; thus, the results cannot be generalized to the whole country. Future studies can target students from high socioeconomic backgrounds and urban settings to assess the prevalence of ACEs and their impact on associated correlates.

Ethics

The study was approved by the Tangaza University Ethical and Research Committee and the National Commission for Science, Technology and Innovation (NACOSTI/P/19/570).

Conflict of Interest

The authors declare that there is no conflict of interest associated with this publication.

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Table 1: Socio-Demographic Characteristics of the Respondents

54. Variable		**55. Frequency**	**56. Valid Percent**
57. Age group	58. 13-15 years	59. 224	60. 37.6
	61. 16-17 years	62. 371	63. 62.4
	64. Total	**65. 595**	**66. 100**
67. Gender	68. male	69. 298	70. 50.1
	71. female	72. 297	73. 49.9
	74. Total	**75. 595**	**76. 100**
77. Form	78. form 1	79. 183	80. 30.8
	81. form 2	82. 184	83. 30.9
	84. form 3	85. 163	86. 27.4
	87. form 4	88. 65	89. 10.9
	90. Total	**91. 595**	**92. 100**
93. Religion	94. Catholic	95. 129	96. 21.7
	97. Protestant	98. 294	99. 49.4
	100. Muslim	101. 52	102. 8.7
	103. Other religion	104. 120	105. 20.2
	106. Total	**107. 595**	**108. 100**
109. Place of Residence	110. Rural	111. 372	112. 62.5
	113. Urban	114. 223	115. 37.5
	116. Total	**117. 595**	**118. 100**
119. Family organization	120. Both parents	121. 259	122. 43.5
	123. Single parent	124. 257	125. 43.2
	126. Stepparent	127. 9	128. 1.5
	129. Grandparent	130. 27	131. 4.5
	132. Orphanage	133. 43	134. 7.2
135.	**136. Total**	**137. 595**	**138. 100**

Table 2: Bivariate analysis of factors associated with ACEs

141. Variables	142. Total %	143. ACEs		144. Chi-Square Test		
145.	146.	147. Low Risk 148. (1-3 score)	149. High Risks 150. (4-10)	151. X^2Value	152. df	153. P value.
154. Age						
155. 13-15 156. 16-17	157. 224(37.6) 158. 371(62.4)	159. 92(41.1) 160. 162(43.7)	161. 132(58.9) 162. 209(56.3)	163. .384	164. 1	165. 0.535
166. Gender						
167. Male 168. Female	169. 298(50.1) 170. 297(49.9)	171. 132(44.3) 172. 122(41.1)	173. 166(55.7) 174. 175(58.9)	175. .630	176. 1	177. 0.428
178. Level of Education						
179. Form 1 180. Form 2 181. Form 3 182. Form 4	183. 183(30.8) 184. 184(30.9) 185. 163(27.4) 186. 65(10.9)	187. 68(37.2) 188. 79(42.9) 189. 69(42.3) 190. 38(58.5)	191. 115(62.8) 192. 105(57.1) 193. 94(57.7) 194. 27(41.5)	195. 8.910	196. 3	**197. 0.031**
198. Religion						
199. Catholics 200. Protestant 201. Muslim 202. Others	203. 129(21.7) 204. 294(49.4) 205. 52(8.7) 206. 120(20.2)	207. 54(41.9) 208. 116(39.5) 209. 41(78.8) 210. 43(35.8)	211. 75(58.1) 212. 178(60.5) 213. 11(21.2) 214. 77(64.2)	215. 31.38 4	216. 3	**217. <0.001**
218. Residence						
219. Rural 220. Urban	221. 372(62.5) 222. 223(37.5)	223. 152(40.9) 224. 102(45.7)	225. 220(59.1) 226. 121(54.3)	227. 1.357	228. 1	229. P=0.244
230. Family Organization						

231. Both Parents 232. Single Parents 233. Stepparents 234. Grandparents 235. Living in Orphanage	236. 259(43.5) 237. 257(43.2) 238. 9(1.5) 239. 27(4.5) 240. 43(7.2)	241. 127(49.0) 242. 84(32.7) 243. 5(55.6) 244. 10(37.0) 245. 28(65.1)	246. 132(51.0) 247. 173(67.3) 248. 4(44.4) 249. 17(63.0) 250. 15(34.9)	251. 24.57 8	252. 4	**253. <0.001**
254. Emotional Problems							
255. Normal Abnormal	256. 513(86.2) 257. 82(13.8)	258. 237(46.2) 259. 17(20.7)	260. 276(53.8) 261. 65(65)	262. 18.742	263. 1	**264. <.001**
265. Conduct Problems							
266. Normal Abnormal	267. 520(87.4) 268. 75(12.6)	269. 235(45.2) 270. 19(25.3)	271. 285(54.8) 272. 56(74.7)	273. 10.56 6	274. 1	**275. .001**
276. Hyperactivity Problems							
277. Normal Abnormal	278. 559(93.9) 279. 36(6.1)	280. 247(44.2) 281. 7(19.4)	282. 312(55.8) 283. 29(80.6)	284. 8.463	285. 1	**286. .004**
287. Peer problems							
288. Normal Abnormal	289. 536(90.1) 290. 59(9.9)	291. 244(45.5) 292. 10 (16.9)	293. 292(54.5) 294. 49(83.1)	295. 17.73 6	296. 1	**297. <.001**
298. Emotional and Behavioural Problems (Total Difficulties)							
299. Normal Abnormal	300. 538(90.4) 301. 57(9.6)	302. 248(46.1) 303. 6(10.5)	304. 290(53.9) 305. 51(89.5)	306. 26.654	307. 1	**308. <.001**

Table 3: Multivariate analysis Results

311. Variable	**312.** ACEs 313. Low Risk **314.** (1-3 score)	315. High Risks 316. (4-0)	**317. OR**	**318. 95 %CL**		**319. P Value**
				320. Lower	**321. Upper**	
322. Level of education	**323.**	**324.**	**325.**	**326.**	**327.**	**328.**
329. Form 1	330. 68(37.2)	331. 115(62.8)	**332.** 2.8 73	**333.** 1.50 0	**334.** 5.50 2	**335. .001**
336. Form 2	337. 79(42.9)	338. 105(57.1)	**339.** 2.0 48	**340.** 1.07 0	**341.** 3.92 0	**342. .030**
343. Form 3	344. 69(42.3)	345. 94(57.7)	**346.** 2.4 10	**347.** 1.24 9	**348.** 4.64 7	**349. .009**
350. Form 4	**351.** 38(58.5)	**352.** 27(41.5)	**353. Reference**			
354. Religion						
355. Catholics	356. 54(41.9)	357. 75(58.1)	358. 0.6 95	359. .398	360. 1.21 4	361. 0.20 1
362. Protestant	363. 116(39.5)	364. 178(60. 5)	365. .86 6	366. .537	367. 1.39 7	368. 0.55 5
369. Muslim	370. 41(78.8)	371. 11(21.2)	372. .15 4	373. .067	374. .352	**375. <0.0 01**
376. Others	**377.** 43(35.8)	**378.** 77(64.2)	**379. Reference**			
380. Family Organization						
381. Both parents	382. 127(49.0)	383. 132(51.0)	384. 3.7 19	**385.** 1.71 8	**386.** 8.04 8	**387. .001**
388. Single parent	389. 84(32.7)	390. 173(67.3)	391. 6.4 94	**392.** 2.98 5	**393.** 14.1 30	**394. <.00 1**
395. Stepparent	396. 5(55.6)	397. 4(44.4)	398. 2.3 05	**399.** .466	**400.** 11.3 99	**401.** .306
402. Grandparents	403. 10(37.0)	404. 17(63.0)	405. 5.6 92	**406.** 1.87 0	**407.** 17.3 20	**408. .002**
409. Living in an orphanage	**410.** 28(65.1)	**411.** 15(34.9)	**412. Reference**			
413. Emotional Problems						
414. Normal	415. 247(44.2)	416. 312(55.8)	**417.** .44 0	**418.** .225	**419.** .858	**420. .016**

421. Abnormal	**422.** 7(19.4)	**423.** 29(80.6)	**424. Reference**			
425. Conduct Problems						
426. Normal	427. 235(45. 2)	428. 285(54.8)	**429.** .59 9	**430.** .318	**431.** 1.13 1	**432.** .114
433. Abnormal	**434.** 19(25.3)	**435.** 56(74.7)	**436. Reference**			
437. Hyperactivity Problems						
438. Normal	439. 235(45. 2	440. 285(54.8)	**441.** .44 8	**442.** .168	**443.** 1.19 8	**444.** .110
445. Abnormal	**446.** 19(25.3)	**447.** 56(74.7)	**448. Reference**			
449. Peer Problems						
450. Normal	451. 244(45. 5)	452. 292(54.5)	**453.** .33 1	**454.** .145	**455.** .754	**456. .008**
457. Abnormal	**458.** 10 (16.9)	**459.** 49(83.1)	**460. Reference**			
461. Emotional and Behavioural problems (Total Difficulties)						
462. Normal	463. 248(46. 1)	464. 290(53.9)	465. .42 8	466. .145	467. 1.26 7	468. .125
469. Abnormal	**470.** 6(10.5)	**471.** 51(89.5)	**472. Reference**			

Ethical Approval

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

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Ref. No. **NACOSTI/P/19/570** Date: **26th August, 2019**

Evelyne Mutamba
Tangaza University College
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NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"The relationship between adverse childhood experiences and emotional-behavioural problems among adolescents at a private high school in Thika West Sub-County, Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Kiambu County** for the period ending **19th August, 2020.**

You are advised to report to **the County Commissioner and the County Director of Education, Kiambu County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

DR. STEPHEN K. KIBIRU, PhD.
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Kiambu County.

The County Director of Education
Kiambu County.

National Commission for Science, Technology and Innovation is ISO9001: 2008 Certified