

Relationship between Domestic Violence and Mathematics Achievement of Senior Secondary School Students in Nasarawa West Educational Zone, Nasarawa State Nigeria

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Abstract

The study examined the relationship between domestic violence and Mathematics achievement of senior secondary school students in Nasarawa State, Nigeria. Correlational research design was used for this study with a total population of 11,668 SSII students and a sample size of 370 SS II students. Multistage sampling procedure was used for this study. Two research questions, two objectives and corresponding null hypotheses were formulated for this study. Two research questions, two objectives and corresponding null hypotheses were formulated for this study. Two instruments; Domestic violence Questionnaire (DOVIQ) and Mathematics Achievement Test (MAT) were used for this study. Pearson product moment correlation was used to answer the research questions on the basis of the values of r (coefficient of correlation) while the hypotheses were tested at 0.05 level of significance. The instrument was pilot tested using Richards Kuder Son which gave a reliability index of 0.86. The findings from the study revealed a significant negative relationship of physical violence, psychological violence and Mathematics achievement of secondary school students in Nasarawa State. The study concluded that adverse family experiences such as physical and psychological violence significantly hindered the Mathematics achievement of secondary school students in Nasarawa State. The study recommended among others that parents and guardians should adopt non-violent disciplinary measures to foster a safe and supportive home environment.

Keywords: Domestic Violence, Physic, Parental Divorce, Academic Achievement
Introduction

One essential goal of education is to ensure that every student has a chance to stand out both in school and in life after schooling. The achievements of students in schools depend on their mental and physical capacities which are affected by number of factors. One important factor that affects students' learning and academic achievement in Mathematics is the home where a student is brought up (Samuel, 2021). The home as the first training environment and foundation for the student has a great impact on the students' psychological, emotional, social and economic status. Academic achievement of any student cannot be separated from the home environment in which he/she is brought up (Fantuzzo & Mohr, 2019). Therefore, the home environment has a great influence on the student's psychological, emotional, social and economic state because it is the first training ground and the foundation for the student, whatever happens at home goes a long way in affecting the behavioural and psychological upbringing of the student as well as his academic achievement (Meltzer, Doos, Vostanis, Ford & Goodman, 2019). The home environment is considered a powerful influence on the student as it is viewed as consequential for student's developmental outcomes such as cognitive ability, school readiness, emotional adjustment and academic achievement.

Academic achievement in Mathematics refers to the outcome of students from Mathematics assessment or test (Fantuzzo & Mohr, 2019). It is the extent to which a student, teacher or institution has achieved the educational goal. It also indicates the extent to which students have mastery of the subject matter. Academic achievement according to Okeke (2019) in Chamundeswari (2014), is the specified level of attainment or proficiency in academic work as evaluated by the teachers, standardized test or by a combination of both. It is the knowledge acquired and skills developed in school subjects, generally indicated by marks obtained in tests. Academic achievement is the extent to which students have attained a short or long- term educational goals and more so, academic achievement is important because it is strongly linked to the positive outcomes (Animba & Obika, 2020). In the context of this study, academic achievement is therefore seen as the extent to which students engage in various school related activities and how they demonstrate application of acquired knowledge and skills in solving their own problems. Much emphasis is laid on the role secondary education plays in laying the foundations for the education of students.

Academic achievement in secondary schools' Mathematics is rated using a number of parameters. Oluwakemi (2018), identified eight rating parameters for evaluating students' academic achievement namely inventories, punctuality, classwork, assignments, dressing, practical, attendance and participation in classroom activities. In SSCE, academic achievement is measured only in cognitive aspect as shown by the student's grade. Distinctions and Credits are often regarded as good grades while passes and fail are regarded as poor grades. Academic achievement is essential to get promoted to the next level in school and the turning point of lives of students is when they get into secondary level of schooling. Similarly, family has the potential to influence students' academic achievement in the area. This is because family is the first environment of the students which gives the initial experience that would mold the child's values, aspirations, emotions, interest and attitudes are offered by the parents/family (Okeke, 2019).

The term "domestic violence" refers to violence that occurs in the home among individuals related by marriage or by blood. According to Edwards (2019), domestic violence is the acts of physical and mental cruelty progressing from a slap or shove, to a punch or kick, and to the more extreme manifestations of violence, in suffocation, strangulation, attempted murder or murder. It also refers to different types of abuse of various scales such as child abuse, intimate partner abuse, elder abuse and abuse of the siblings. Such may include acts of physical violence (slap, punch, strangle, rape among others); psychological trauma, threatening, coercive conduct; interference with the personal liberty of the victim; or includes the forcible entry of the victim's residence against their will, many types of abuse such as child abuse, intimate partner abuse, elder abuse, and sibling abuse (Nevada Network Against Domestic Violence, 2021).

In addition, domestic violence consists of actions, words, attitudes and socio-cultural damages that prevent individuals from achieving their full human potentials as a family. The act could be deliberate or non-deliberate. Violence in the family is a deliberate pattern of abusive and accusative tactics used by one member(s) of the family in an ultimate relationship to obtain or maintain power and absolute control or independence within the family. According to Dutton (2018), Violence in the family covers a broad range of controlling behaviours which typically involve fear, harm, intimidation and emotional deprivation which might affect students' academic achievement in schools. Violence in the family could be physical, psychological,

sexual, violence based on gender and socioeconomic status of parents. Therefore, the study will be addressing three forms of domestic violence which includes, physical, psychological and sexual violence which might have detrimental on students' achievement in Mathematics.

Physical violence or abuse involves behaviours like kicking, slapping, shoving, hitting, punching, restraining, pushing, confining, scratching, confining, throwing things at a person, threatening or attacking the person with a weapon, locking the person in or out of the house or abandoning the person in a dangerous place, refusing to provide assistance when the person is injured, sick, or pregnant, breaking bones, burning and murder (Abdulkarim, 2020 in Rose, 2010). Physical violence according to Dutton (2018), is any behaviour that involves the intentional use of force against the body of another person that risks physical injury, harm and pain. Physical violence in the family include pushing, hitting, slapping and choking, twisting of a body part, forcing the ingestion of an unwanted substance and use of weapon on any family member. The child who witnessed or is involved in such act may not concentrate on his/her academic work and may not pass his/her examinations with good grades. Miller (2017) also posited that violence on children causes problem to both their physical and emotional stability, the longer physical violence of child continues, the more serious the consequences, the initial effects of physical violence are painful and emotionally traumatic for the child. The long-term consequences of physical violence impact on the child in their adult life, on their family and on the community, in the most extreme cases, physical violence results in the death of the child (Dutton, 2018). These may therefore results in poor achievement in Mathematics.

Another important variable of domestic violence is the psychological violence which involves denying a victim access to money, other basic resources and necessities, degradation in any form of the member(s) of a family subjecting or exposing another to a behaviour that may result in psychological trauma which may include anxiety, chronic depression or post-traumatic stress disorder and also results in poor students' achievement in Mathematics. Psychological violence, according to Johnson (2019) refers to humiliating a victim (a family member) privately or publicly, controlling what the victim can and cannot do, withholding information from the victim, deliberately doing something to make the victim feel diminished or embarrassed. Stephen (2017) noted that verbal insults and emotional intimidation lowered students' academic self-esteem and performance in Mathematics. Psychological abuse created feelings of inadequacy

among students, reducing their problem-solving ability in quantitative subjects (Dutton, 2019). It was also reported that emotionally abused learners experienced greater difficulty in Mathematics comprehension and retention compared to their peers (Samuel, 2021).

Statement of the Problem

The issue of poor academic achievements of Mathematics students most especially at the secondary school level has been a source of concern to all stakeholders in Nigeria such as the teachers, parents, educational administrators and the Government which has also led to poor achievements of students in external Mathematics examinations such as WAEC, NECO, NABTEB (2020- 2024) and other external examinations. Education at the secondary school level is supposed to be the bedrock and the foundation in to higher or tertiary institutions, it is an investment as well as an instrument that can be used to achieve a more rapid economic, social, political, technological, scientific and cultural development in a country. It is quite unfortunate that the secondary schools today are not measuring up to the expected standard. For some years now, reports on the pages of newspapers and research findings have linked the poor achievements of secondary school students in internal and external examinations to family related problems which is not only infuriating to the students and the parents alone but its effects are equally burdensome on the society.

In addition, domestic violence is threatening many Nigerian families and is unfortunately increasing in Nasarawa West Educational Zone, where the cases of divorce and other family related violence has become the order of the day. Many people the vast majority of them children, have been injured, disabled and killed as a result of domestic violence. Also, students who are victims of domestic violence and broken home exhibit behaviours like drug abuse, smoking, drunkenness, sexual abuse, truancy, school drop- out, fear, anxiety and depression which have devastating effect on their education. Following the recent happenings where domestic violence and cases of divorce have become a great priority, there is therefore an urgent need to address these menaces as soon as possible and accorded with all seriousness they deserved. On these premises, is there any significant correlation between domestic violence and Mathematics achievement of secondary school students in Nasarawa West Educational Zone, Nasarawa State, Nigeria?

Aim and Objectives of the Study

The main purpose of this study is to investigate the relationship between domestic violence and Mathematics achievement of senior secondary school students in Nasarawa West Educational Zone, Nasarawa State, Nigeria. The specific objectives were to;

1. Determine the correlation between physical abuse and Mathematics achievement of secondary school students in Nasarawa West Educational Zone?
2. Examine the correlation between psychological abuse and Mathematics achievement of secondary school students in the Nasarawa West Educational Zone?

Research Questions

The study sought to answer the following questions:

1. What is the correlation between physical abuse and Mathematics achievement of secondary school students in Nasarawa West Educational Zone?
2. What is the correlation between psychological abuse and Mathematics achievement of secondary school students in Nasarawa West Educational Zone?

Research Hypotheses

The following null hypotheses were tested at 0.05 significant level.

H₀₁: There is no significant correlation between physical abuse and Mathematics achievement of secondary school students in Nasarawa West Educational Zone, Nasarawa State.

H₀₂: There is no significant correlation between psychological abuse and Mathematics achievement of secondary school students in Nasarawa West Educational Zone.

Methodology

Correlation survey research design was employed in conducting the study across senior secondary schools in Nasarawa West Educational Zone, Nasarawa State of Nigeria. Correlation research design was adopted for the study. Correlation research design establishes relationships or association between two or more variables. It establishes the direction and magnitude of relationships or association between and among variables (Uzoechi, 2015). Correlational research design was adopted in this study because the study sought to examine the relationship

between domestic violence and Mathematics achievement of senior secondary schools' students in Nasarawa West Educational Zone, Nasarawa State, Nigeria.

The target population of the study was 11,668 SSII students from 75 public senior secondary schools in Nasarawa West Educational Zone. There were five (5) Local Government Areas in Nasarawa West Educational Zone comprising Karu, Keffi, Kokona, Nasarawa and Toto Local Government Areas.

The sample size for the study was 370 SS II students selected from the public senior secondary schools in Nasarawa West Senatorial District, Nasarawa State. The sample size was adopted using a table for determining sample size for research activities by Paul C. Boyd, Educational and Psychological Measurement (2006). The study adopted a multi stage sampling procedure. In the first stage, the area was assigned in to five cluster areas with each Local Government Area serving as a cluster area. In the second stage, two schools were selected from each cluster area using simple random sampling technique making it a total of ten (10) schools. The five Local Government Areas are Karu, Keffi, Kokona, Nasarawa and Toto. In the final stage, a proportionate random sampling technique was used to select 370 SSII students from the ten sampled schools for enumeration.

Two instruments were used for data collection. The instruments were Domestic Violence Questionnaire (DOVIQ) and Mathematics Students Achievement Test (MASAT). The Domestic Violence Questionnaire (DOVIQ), which contained fifteen (15) items, was designed based on 4-point scale of Strongly Agree (SA= 4), Agree (A= 3), Disagree (D= 2) and Strongly Disagree (SD= 1). It was clustered into two segments: physical violence and psychological violence. The Mathematics Students Achievement Test (MASAT), on the other hand, consisted of fifty (50) standardized objective questions in Mathematics with five options lettered A–E, designed to determine the academic achievements of secondary school students in Nasarawa West Educational Zone of Nasarawa State, Nigeria.

The instruments were administered to the selected students using face to face delivery by the researcher and were collected back immediately after completion. The instruments were administered to public senior secondary students when the schools were in session and during school hours. This is important because the schools provided the most suitable pool of students

within the sample areas. The researcher was assisted by two research assistants that were selected among the secondary school Mathematics teachers in the sampled schools.

Pearson Product Moment Correlation (PPMC) was used to answer the research questions on the bases of r (coefficient of correlation). Any correlation coefficient value below 0.50 was considered low while those above were considered high. Hypotheses were tested by comparing the p -value (probability values) of Pearson Product Moment Correlation (PPMC at 0.05 level of significance. For hypotheses whose p -value was less than 0.05, they were rejected, while those higher than 0.05 were accepted.

Results

Research Questions 1: What is the correlation between physical abuse and Mathematics achievement of secondary school students in Nasarawa west educational zone?

Table 1: Correlation between physical abuse and mathematics achievement of secondary school students in Nasarawa West Educational Zone

Variables	N	X	Std. D	R	Remark
Physical abuse	370	3.42	1.71		Negative moderate
				-0.612	Correlation
Mathematics achievement	370	51.21	7.15		

Table 1 presents the relationship between physical abuse and mathematics achievement among 370 secondary school students in Nasarawa west Educational Zone. The mean score for physical abuse is 3.42 and the standard deviation is 1.71, while the mean score for mathematics achievement is 51.21 and 7.15 as the standard deviations. The correlation coefficient (r) is -0.612 which surpasses the benchmark value of 0.50 in magnitude, indicating a strong negative relationship between physical abuse and mathematics achievement.

Research Questions 2: What is the correlation between psychological abuse and Mathematics achievement of secondary school students in Nasarawa West Senatorial districts?

Table 2: Correlation between psychological abuse and mathematics achievement of secondary school students in Nasarawa West Educational Zone

Variables	N	X	Std. D	r	Remark
Psychological abuse	370	3.67	1.95		Negative high
				-0.755	Correlation
Mathematics achievement	370	51.21	7.15		

Table 4 shows the relationship between psychological abuse and mathematics achievement among 370 secondary school students in Nasarawa West Educational Zone. The mean score for psychological abuse is 3.67 and standard deviation is 1.95, while the mean score for mathematics achievement is 51.21 and 7.15 as standard deviation. The correlation coefficient (r) is -0.755, which is well above the benchmark value of 0.50 in magnitude, signifying a strong negative relationship between psychological abuse and mathematics achievement.

Hypothesis 1: There is no significant correlation between physical abuse and Mathematics achievement of secondary school students in Nasarawa West Educational Zone, Nasarawa State.

Table 3: There is no significant correlation between physical abuse and Mathematics achievement of secondary school students in Nasarawa West Educational Zone, Nasarawa State

Variables	N	X	Std.D	Df	R	r ²	p-value	Decision
Physical abuse	370	3.42	1.71					
				369	-0.612	0.375	0.014	Reject
Mathematics achievement	370	51.21	7.15					

Table 5 shows the relationship between physical abuse and mathematics achievement of secondary school students in Nasarawa West Educational Zone, Nasarawa State. The result revealed a correlation coefficient of $r = -0.612$, $r^2 = 0.375$, and a p-value of 0.014, which is less than the 0.05 level of significance. Therefore, the hypothesis was rejected, indicating a significant negative relationship between physical abuse and mathematics achievement of secondary school students in Nasarawa West Educational Zone.

Hypothesis 2: There is no significant correlation between psychological abuse and Mathematics achievement of secondary school students in Nasarawa West Educational Zone.

Table 4: There is no significant correlation between psychological abuse and Mathematics achievement of secondary school students in Nasarawa West senatorial districts.

Variables	N	X	Std.D	Df	R	r ²	p-value	Decision
Psychological abuse	370	3.67	1.95	369	-0.755	0.570	0.001	Reject
Mathematics achievement	370	51.21	7.15					

Table 6 presents the relationship between psychological abuse and mathematics achievement of secondary school students in Nasarawa West Educational Zone, Nasarawa State. The result revealed a correlation coefficient of $r = -0.755$, $r^2 = 0.570$, and a p-value of 0.001, which is below the 0.05 level of significance. Consequently, the hypothesis was rejected, confirming a significant negative relationship between psychological abuse and mathematics achievement of secondary school students in Nasarawa West Educational Zone.

Discussions

The finding from hypothesis one revealed that there is a significant negative correlation between physical abuse and Mathematics achievement of secondary school students in Nasarawa West Educational Zone, Nasarawa State. This result agrees with Miller (2017) whose finding revealed that violence on children causes problem to both their physical and emotional stability, the longer physical violence of child continues, the more serious the consequences, the initial effects of physical violence are painful and emotionally traumatic for the child. Similarly, the findings of Dutton (2018) further revealed that the long- term consequences of physical violence impact on the child in their adult life, on their family and on the community, in the most extreme cases, physical violence results in the death of the child, these may therefore results in poor achievement in Mathematics.

The finding from hypothesis two indicated a significant negative correlation between psychological abuse and Mathematics achievement of secondary school students in Nasarawa West Educational Zone. This is consistent with Stephen (2017), who noted that verbal insults and emotional intimidation lowered students' academic self-esteem and performance in Mathematics. In a related study, Davou (2019) discovered that persistent psychological abuse created feelings of inadequacy among students, reducing their problem-solving ability in quantitative subjects. Likewise, Samuel (2021) also reported that emotionally abused learners experienced greater

difficulty in Mathematics comprehension and retention compared to their peers. These findings reinforce the evidence that emotional well-being is critical to learning success.

Conclusion

The study concluded that various forms of child abuse and adverse family experiences significantly hinder the Mathematics achievement of secondary school students in Nasarawa West Educational Zone, Nasarawa State. These abusive experiences in the family reduce students' concentration, confidence, and motivation, ultimately impairing their academic success. Strengthening school-based support systems, community awareness, and family interventions are therefore essential in mitigating these negative influences to improve the overall well-being and academic achievement of learners in the district.

Recommendations

Based on each of the findings, the following recommendations were made:

1. Parents and guardians should adopt non-violent disciplinary measures to foster a safe and supportive home environment
2. Schools and communities should organize sensitization programs to discourage verbal and emotional maltreatment of children.

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