Risk Factors for Emotional Distress among Youths Following the Experience of a Traumatic Event

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Abstract

Background to the Study

Despite the fact that road traffic accidents are notorious for causing marked psychiatric morbidity among most affected persons, most studies focus on its psychological impact in adults. There is a dearth of data concerning the psychological consequences of road traffic accidents in adolescents.

Objective: To determine the prevalence and correlates of emotional distress among secondary school pupils after the experience of a road traffic accident close to the school premises, which resulted in the death of some pupils, and severe injuries in others.

Methods: This was a cross-sectional study of 107 adolescents who had heard about or witnessed the road traffic accident, and were selected using total sampling of those who met the inclusion criteria at a secondary school in Lagos, Nigeria. Questionnaires used were, The Rosenberg Self-Esteem Questionnaire, Strengths and Difficulties Questionnaire (Emotional Sub-Scale), and a Socio-Demographic Questionnaire.

Results

The prevalence of emotional distress among the secondary school pupils was 20%. Correlates of emotional distress were; age (OR=0.8, CI=0.63-0.84), junior secondary class (OR=0.1, CI=0.01-0.49), female gender (OR=3.6, CI=1.2-7.9), and poor self-rated health perception (OR=0.1, CI=0.02-0.4).

Conclusion

For most people, emotional distress is quite common secondary to exposure to a road traffic accident, children and adolescents have a greater vulnerability to this. Early identification and psychosocial management of emotional problems in youths exposed to such accidents may help prevent the development of enduring mental health problems.

Keywords: Emotional Distress, Road Traffic Accident, Adolescents, Trauma

Introduction

Globally, Road Traffic Accidents (RTA) may be viewed as an epidemic, and leading cause of injury-related deaths and disability. In Nigeria, injuries and deaths resulting from RTA are on the rise, and RTA is one of the country's leading causes of overall deaths and trauma-related disability (Onyemaechi and Ofoma, 2016). Road Traffic Accidents (RTA) may be considered a public health burden due to its deleterious effect on the physical, psychological and social well-being of affected persons worldwide (Kovess-Mastefy et al, 2017). Similar to adults, RTA are a well-known risk factor for impaired physical health in children and adolescents (Schaefer et al, 2006). Each year, about 10 to 30 million children and adolescents sustain injuries, and approximately one million children die every year due to injuries from RTA and other forms of accidents (Onyemaechi, 2020). The physical consequences of RTA could manifest as injuries in the form of multiple bruises, lacerations, fractures, hemorrhage, and in some cases, lead to death.

Although it is widely known that, apart from impact of RTA on physical health, it may also result in adverse psychological outcomes in affected adolescents, emotional distress in adolescents secondary to RTA is a rarely studied phenomena (Mirza et al, 1998, Mayou et al, 1993). This is quite unfortunate, as some studies have demonstrated that adolescents are especially vulnerable to overwhelming emotional problems after passing through a major traumatic event, such as a RTA (Dai et al, 2018, Elliot et al, 2021).

Trauma in children and adolescents may result in marked neurobiological changes which may impede or alter the development of the young human brain (Dye, 2018). These changes may translate to disturbed social, cognitive and emotional functioning, which may persist from childhood, through adolescence, and into adulthood (Dye, 2018). Hence, early assessment, identification, diagnosis and treatment of trauma-related emotional distress in the early stages post-RTA is key (Dai et al, 2018). Furthermore, it has also been established that individual, familial and social factors are key determinants of emotional stability in adolescents after exposure to trauma (Elliot et al, 2021). Therefore, it is imperative that these variables are known, identified and factored into the medical and psychosocial management of adolescents exposed to a traumatic event such as an RTA, in order to achieve optimal physical and mental health in them.

The objective of this study was to explore the magnitude and correlates of emotional distress in adolescents following the experience of an RTA. It is hoped that findings from this study would contribute to the knowledge base, and inform interventions required to reduce the prevalence and consequences of psychological distress among adolescents who have experienced a RTA, not only in Nigeria and sub-Saharan Africa, but also, the world at large. In addition, correlates identified in this research may guide policy makers and corporate bodies concerned with the promotion of mental health in adolescents on areas where they need to expend their resources, and how to identify and support vulnerable adolescents who may have been exposed to traumatic events such as RTA.

Materials and Methods

Study Design and Sample

This was a descriptive cross-sectional study conducted at a secondary school in Lagos, South-West Nigeria, in March, 2022. A road traffic accident occurred close to the school premises, which involved a truck skidding off the road and colliding into other vehicles, students and other pedestrians on the sidewalk. This accident resulted in severe injuries and the deaths of some students of the school, and the event was witnessed by many students, as it happened during closing hours when most of them were leaving the school premises. The students of the school were assessed one month after the incident. The inclusion criteria were; adolescent students who heard about or witnessed the RTA, those who sustained minor physical injuries from the RTA, gave assent, and whose guardians also consented to their participation in the study. Adolescents who sustained severe injuries, and those with a past history of mental illness were excluded from the study. A total of 107 adolescents were selected using total sampling of those who met the inclusion criteria.

Study Instruments

Socio-Demographic Questionnaire

This included information on the:

1) Demographic variables – Age, gender, religion, class at school
2) Social variables – Marital status of parents, parents level of education, parents employment status, number of siblings, number of wives father has and whom the child resides with
3) Self-rated perception of health- This was evaluated by asking the question: How would you rate your general state of health presently? Response to be ticked was one of the following: Poor, Fair, Good

Strengths and Difficulties Questionnaire

The Strengths and Difficulties Questionnaire (SDQ) by Goodman (1997) is a brief instrument which can be used to measure the behaviour of children and adolescents. It has 4 scores evaluating the following behaviours: emotional symptoms, conduct problems, hyperactivity, and peer relationships (pro-social). A total score is obtained by adding up the scores the four subscales. However, for the purpose of this study, only the emotional symptoms scores were assessed. The questions on the SDQ refer to the child's behaviour in the previous 2 weeks, and are scored on a 3-point system: 0 'not true', 1 'somewhat true', 2 'certainly true'. For the emotional symptoms sub-scale scores, the total ranges from 0-10, with total scores being graded as follows; 0-5 (normal), 6 (borderline) and 7-10 (Abnormal). This questionnaire has an internal consistency value of >0.70 (Mieloo et al, 2012).

Rosenberg Self-Esteem Scale

Self-esteem was assessed with the Rosenberg Self-Esteem Scale, this is a reliable and widely used measure of self-esteem (Blascovich, 1991). The Rosenberg Self-Esteem Scale (RSES) consists of 10 statements related to overall feelings of self- acceptance and self-worth. The items

are answered on a 4-point scale ranging from strongly agree to strongly disagree. Reverse scoring is done for items 1, 2, 4, 6, and 7 of the questionnaire. It uses a scale of 0 to 30, scores between 15 and 25 are normal, and scores less than 15 suggest low self-esteem. This instrument has an internal consistency of 0.8 and has been used in Nigerian studies (Enejoh et al, 2016, Oladipo et al, 2014).

Procedure
The purpose of the study was explained to the adolescents and their caregivers, and consent forms were filled accordingly, subsequently, participants were given questionnaires to fill and return after completion. Due to concerns about the reading and understanding ability of the junior secondary students, the instructions and questions were read aloud to them. Whereas, the senior secondary students were told to ask for clarification of any of the questionnaires, if necessary. However, none of the senior students required this assistance. Those who were identified as having psychopathology were referred to the school mental health unit of the Lagos State Ministry of Health for further psychosocial evaluation and intervention.

Ethical consideration
The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committee on human experimentation with the Helsinki Declaration of 1975, as revised in 2008. The study protocol was approved by the institutional review board of the participating institution (NHREC04/04/2008).

Statistical Analysis
Data was analyzed using the Statistical Package for the Social Sciences version 22 (SPSS 22). Descriptive statistics were used to summarize the socio-demographic and clinical variables of the participants. Chi-square test and Mann-Whitney U tests were used accordingly for univariate analysis, to determine the significance of study parameters among adolescents. The association between socio-demographic variables, clinical variables and emotional problems were further investigated using logistic regression analyses (backward stepwise method). For all the statistical tests, level of significance was set at $P < 0.05$, however, variables with P-values less than 0.1 were also included in the regression analysis to account for the possible influence of confounders in the univariate analysis.

Results
A total of 107 adolescents met the inclusion criteria for the study. All of the adolescents and their guardians gave consent. The response rate was 100%, and there were no cases of missing questionnaires.

Socio-Demographic Characteristics
There was an almost equal distribution of gender and present academic class in the sample, with majority aged 15 years and above (N=67, 63%), with age range between 10 and 17 years. A high proportion of the participants reside with both parents (N=83, 78%), have parents who are married to each other (N=88, 82%) and come from a monogamous family setting (N=79, 74%)

Most of the children have parents/caregivers who are both employed (N=64, 60%). Please see Table 1 below for more details.

Clinical Characteristics

A greater proportion of the sample had good self-rated health perception (N=84, 79%). Majority of the participants had a high self-esteem (N=64, 60%), and a mean score of 28(±6). The prevalence of those with emotional problems was 20%, and the mean emotional symptom score was 4(±3). Please see Table 2 for more details.

Table 1- Socio-demographic Variables

VARIABLE	FREQUENCY N (%)	VARIABLE	FREQUENCY N (%)	MEAN (±SD)
Gender		**Age (Years)**		
Male	54(51)		67(63%)	15(2.3)
Female	53(49)	≤15	40(37%)	
		>15		
Class				
Junior	55(52)			
Senior	52(48)			
Orphanhood				
No	95(88)			
Father Dead	6(6)			
Mother Dead	3(3)			
Both Parents Dead	3(3)			
Child Resides With				
Both Parents	83(78)			
Mother Only	12(11)			
Father Only	2(2)			
A relative	10(9)			
Marital Status of Parents				
Married	88(82)			
Separated/Divorced	7(7)			
Widow/Widower	10(9)			
Co-Parents (Unmarried)	2(2)			
Family Setting				
Monogamous	79(74)			
Polygamous	9(8)			
Not applicable(Unmarried/Widow/Widower/Separated/Divorced	19(18)			
Fathers Level of Education				
No formal	5(5)			
Primary	7(6)			

Secondary	49(46)
University	46(43)
Mothers Level of Education	
No formal	8(7)
Primary	12(11)
Secondary	38(36)
University	49(46)
Parents Employment Status	
Only Father Employed	25(23)
Only Mother Employed	15(14)
Both Employed	64(60)
Both Unemployed	3(3)

Table 2- Clinical Variables

VARIABLE	FREQUENCY N (%)	MEAN (±SD)	OBSERVED RANGE	POSSIBLE RANGE
Emotional Problems (using SDQ)	21(20)	4(3)	0 - 10	0 - 10
Yes	86(80)			
No				
Self-Esteem (using RSES)				
Low (<15)	43(40)	28(6)	10 - 40	10 - 40
High(≥15)	64(60)			
Self-Rated Perception of Health				
Good	84(79)			
Fair	14(13)	---------	--------	--------
Poor	9(8)			

Association between Emotional Problems, Socio-Demographic Variables and Clinical Variables

The Chi-square Test of Independence was used to explore a possible association between categorical variables and emotional problems. The following variables were found to have a significant association with emotional problems; self-rated perception of health, gender, present academic class, age, family setting, parental employment status, whom the child lives with, and maternal level of education. However, no association was found between self-esteem and emotional problems (See Table 3 below).

Table 3- Chi-square Test and Mann-Whitney U Test Showing the Independent Association Between Emotional Problems, Clinical Variables and Socio-demographic Variables

VARIABLE	CHI-SQUARE VALUE (X^2)	P-VALUE
Self-rated perception of health	10.72	**<0.001**
Present academic class	2.44	**0.01**
Family setting	2.14	**0.02**
Parental employment status	1.08	**0.03**
Maternal level of education	0.41	**0.03**
Gender	3.94	**0.01**
Whom the child lives with	0.69	**0.03**
Age	1.47	**0.02**

The relationship between socio-demographic variables, clinical variables and emotional problems were further investigated with Logistic Regression analyses using the Backward Stepwise Method, and emotional problems was the dependent variable. This analysis was done by including all independent variables from the bivariate analysis with P-values less than 0.05. In addition, variables with P-values less than 0.1 (orphan hood, self-esteem) were also included in this analysis to account for the possible influence of confounders in the bivariate analysis.

Concerning socio-demographic variables, for females and with increasing age, the risk of having emotional problems was increased by a factor of 4 and 0.8 respectively. Conversely, emotional problems were decreased by a factor of 0.1 in junior secondary school students. With respect to clinical variables, with good self-rated health perception, the risk of having emotional problems were reduced by a factor of 0.1 (See Table 4 below).

Table 4- Socio-demographic Variables and Clinical Variables Independently Associated with Emotional Problems (Using the SDQ) by Regression Analysis

VARIABLE	B	SE	Wald	Df	Sig	Exp. B	95% CI LB	95% CI UB
Self-Rated Health Perception	-2.40	0.76	10.1	1	**<0.001**	0.10	0.02	0.40
Female Gender	1.28	0.56	5.20	1	**0.02**	3.59	1.20	7.86
Junior Class	-2.84	1.10	6.76	1	**0.01**	0.06	0.01	0.49
Age	0.24	0.12	3.90	1	**0.04**	0.79	0.63	0.84

Variables in equation: orphanhood, age, self-esteem, family setting, whom child resides with, self-rated health perception, gender, parental employment status, maternal level of education, present academic class

Discussion

Prevalence of Emotional Distress

The prevalence rate of 20% emotional distress reported among the adolescents indicates that a high proportion of the students were adversely affected by the traumatic event. Notably, due to the fact that most of the previous studies focused on specific mental disorders, there were sparse studies concerning general emotional distress in adolescents as an aftermath of RTA, thereby making it difficult to compare the rate found in this study with others. Therefore, comparisons were made with prevalence rates seen in other general population groups of adolescents. Comparable rates of 21.2% (Amu et al, 2020), 15.7% (Siziya et al, 2015), and 16.9% (Seidu et al, 2021) for emotional distress were reported among adolescents in Mozambique, Zambia and Tanzania respectively. However a lower rate of 12% was found in Nigeria, (Omigbodun et al, 2008) this may have been due to methodological differences between this study and the present one.

Emotional distress may be defined as an emotional state or mood characterized by the feeling of loneliness, sadness, anxiety, suicidal ideation and self-consciousness (Beattie et al, 2019). It is understandable that a significant traumatic event such as a RTA which may involve severe bodily injuries, loss of lives, and destruction of property, may unearth a pot-pourri of negative emotions which may interfere with functioning on all fronts for an adolescent. Consequently, there is the urgent need for mental health assessment and psychological first aid for adolescents who may have been exposed directly or indirectly to RTA, it is expected that this may help reduce the magnitude of emotional distress experienced by them subsequently.

Age

With increasing age, there was an increased risk of emotional distress among the adolescents after the RTA. Our findings are in keeping with previous research which suggest that older adolescents tend to have more psychological morbidity after experiencing a traumatic event such as RTA (Stallard et al, 2001, Merikangas et al, 2010, Tierens et al, 2012). Beyond having increased risk for mental distress after exposure to trauma in the form of RTA, older adolescents have a greater propensity for emotional distress compared to young adolescents possibly due to the reason that, at this phase of life, they are at the cusp of adulthood, and have to grapple with trying to become more self-sufficient, and improve their decision-making skills (Kim-Cohen et al, 2003). Furthermore, in late adolescence, there is the stress of dealing with choosing a future career, navigating relationships, sexuality, peer pressure, managing expectations from parents/caregivers, teachers, and the community in which they reside (Lipari et al, 2014). All these factors may culminate in higher probability of mental health conditions in older adolescents, therefore, there is a need for a higher index of suspicion for psychological distress in them after a RTA, and this should be addressed promptly.

Female gender

Female adolescents had a higher susceptibility to emotional distress compared to their male counterparts. This finding is in tandem with other research which opine that female adolescents tend to experience more mental health problems after a stressful life event (Altemus, 2014, Gust

et al, 2017, Jin et al, 2019, Amu et al, 2020). A likely explanation for this may be that males tend to easily form peer groups, and discuss their problems with close friends and pals thereby easily getting advice and help with their emotional problems. Conversely, females tend to internalize most of their emotional problems, deal with a lot of rivalry, and also experience other stressors such as; body-image problems, self-esteem issues, unwanted romantic or sexual overtures, and in some cases, outright sexual assault, all of which are recipes for emotional distress (Gust et al, 2017, Kuringe et al, 2019, Biswas et al, 2020). This indicates that females may require additional monitoring and support after undergoing a major life-threatening event like RTA.

Junior class
Being in a junior secondary class was associated with lesser emotional distress compared to senior secondary class. The junior secondary class system in Nigeria is typically constituted by adolescents between the ages of 10-13 years, indicating that the pupils in this class fall into the age group of early adolescence. This finding further strengthens the observations made in this study, and previous works, about the link between older adolescence and greater susceptibility to emotional distress (Amu et al, 2020). Therefore, similar explanations elucidated above concerning the possible connection between late adolescence and increased odds of having emotional distress will also come to play here.

Self-rated health perception
Having a good perception of personal health status was associated with reduced emotional distress among the adolescents. Although, there were no similar findings to corroborate this in past research, however, this observation is understandable because having a good sense of well-being and health status may help minimize the psychological impact of an adverse traumatic event. Therefore, adolescents who have experienced a traumatic event may benefit from psychotherapy which focuses on promoting a positive cognitive appraisal of health status, thereby reducing the probability of mental health morbidity.

Conclusion
Emotional distress is commonplace among adolescents who have witnessed, heard about, or directly experienced a RTA. Failure to address psychological problems immediately after the occurrence of such a traumatic event may slow the recovery process, and could result in chronic mental health morbidity. Adolescents who have been exposed to road traffic accidents should be offered immediate psycho-social support, in the form of psychological first aid, psychotherapy, and if indicated, pharmacotherapy. This would help address mental health morbidity, and promote faster recovery from the traumatic experience. Future studies which focus on the trajectory of emotional distress and other specific mental disorders, such as adjustment disorder, post-traumatic stress disorder should be done in adolescents post-trauma.

Strengths and Limitations
This is one of the few studies which has examined emotional problems as an aftermath of road traffic accidents, exclusively in adolescents, in Nigeria, and in Africa as a whole.

A major limitation of this study is the cross-sectional nature, which made it difficult to establish a causal link between emotional distress, and the correlates identified in this study. .

Conflict of Interest
The authors hereby disclose no potential conflict of interest

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