World Journal of Biology Pharmacy and Health Sciences
eISSN: 2582-5542
Cross Ref DOI: 10.30574/wjbphs
Journal homepage: https://wjbphs.com/

(RESEARCH ARTICLE)

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Gun violence as a public health issue: a mental health assessment of survivors in Jema'a local government area, Kaduna State, Nigeria

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World Journal of Biology Pharmacy and Health Sciences, 2025, 22(02), 110-119

Publication history: Received on 25 March 2025; revised on 05 May 2025; accepted on 04 May 2025

Article DOI: https://doi.org/10.30574/wjbphs.2025.22.2.0462

Abstract

Introduction: Over the past twenty years, Kaduna State. Northwest Nigeria has experienced recurrent civil unrest patterned along religious and ethnic lines. Exposure to recurrent violence is a significant risk factor that predisposes survivors to Post-Traumatic Stress Disorder (PTSD).

The paucity of data on the prevalence of gun violence, homicide survivorship, and its relationship to mental health disorders like PTSD premised this project. This study determined the prevalence of gun violence in Jema'a LGA, assessed the effects of gun violence on the mental health of survivors, and ascertained the availability of health interventions aimed at improving the health outcomes of survivors in Jema'a LGA, Kaduna state.

Method: A cross-sectional study design utilizing an adapted researcher-administered semi-structured survey was used. Primary data were collected from 399 adult participants between ages 18 and older. Using the multi-stage sampling technique, Takau was selected via Simple Random Sampling by Balloting without replacement for the research study due to proximity and security reasons.

Result: The findings of this study revealed significantly positive outcomes in several key areas.

First, the research identified a notable prevalence of gun violence in Jema'a LGA, shedding light on the extent of this issue in the region. The data collected indicated a substantial and tangible presence of gun violence, emphasizing the urgency of addressing this concern.

Furthermore, the study revealed a significant link between exposure to gun violence and mental health outcomes, particularly in the context of post-traumatic stress disorder (PTSD). The research uncovered that survivors of gun violence in Jema'a LGA exhibited higher rates of PTSD, highlighting the critical need for mental health support and interventions in the region.

Additionally, the research highlighted the paucity of ongoing health interventions. This implies a significantly negative impact, contributing to a long awaiting mental health recovery period for survivors.

Conclusion: This research provides compelling evidence that addressing the prevalence of gun violence in Jema'a LGA and implementing effective mental health interventions can yield significantly positive outcomes. It underscores the importance of understanding the historical context of violence and conflict in the region. It offers valuable insights into improving the overall well-being of survivors of gun violence in Nigeria.

Keywords: Gun Violence; Post-Traumatic Stress Disorder; Mental Health; Public Health

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1 Introduction

Firearm homicide is one of the most devastating of all events to impact not only individuals but entire communities (Shani et al., 2022). Each year, it results in at least 100,000 fatalities, more than a million injuries, permanent bodily and psychological harm, the dissolution of families, lost productivity, and the divergence of funds from essential health services (Rawson, 2002).

In 2012, over half of all killings committed globally included firearms (Butchart & Mikton, 2014; Kieselbach & Butchart, 2014; Mikton et al., 2016). Guns, however, were the weapon of choice in youth-committed killings using a weapon between 2004 and 2013 (Oudekerk & Morgan, 2016). The issue of gun violence is complicated and varied, and the burden of firearm homicide is disproportionately distributed among minority and marginalized communities (Shani, et al., 2022). Gun availability has increased significantly in Nigeria after the end of the civil war in 1970, especially among criminals. As a result, armed robberies and contract killings have become a nearly everyday occurrence in urban areas, rural areas, and, more lately, on highways. (Rafindadi, 2003; Ejeckam, 1992).

Between 10,000 and 20,000 people are estimated to have died in incidents across Kaduna State since 1980, a pattern of violence that peaked in 1992 and again from 2000 to 2002. Kaduna state has witnessed severe religious and racial segregation for more than 20 years, which was ignited by approximately a dozen violent outbursts with over 500 individuals killed in southern Kaduna alone in 2011 when tensions erupted across 10 northern states due to protests against the results of the presidential election. (Chatham House, 2017).

Among two or more of the communities in Southern Kaduna, there have been numerous incidents of gun-related violence, endangering lives and raising the possibility of mental health issues among survivors. The prevalence of gun violence in communities and among people is influenced by the socioeconomic level, environment, social networks, and education (Slutkin, et al., 2018).

The world is facing challenges when it comes to the mental health of young people (Petel et al.,2007). Moreover, it is important to comprehend both the risk factors and possible shields for the mental health of young people (Fatori et al.,2017). Violence exposure is a significant risk factor that raises the possibility of developing post-traumatic stress disorder (PTSD) (Rothon, Stansfeld, Mathews, Kleinhans, Clark & Lund 2011; Coovadia, Jewkes, Barron, Sanders & McIntyre 2009), depression (Ward et al., 1992 & Mollica et al., 1995), suicidal ideation (Angold et al., 1995) and risk behaviors (Balázs et al., 2013) such as high alcohol consumption and drug use.

Knowledge of the relationships between exposure to violence and mental health, as well as the design of interventions aimed at offering mental health support after a shooting, may be improved by understanding survivors' mental health symptoms following an episode of gun violence, either direct exposure or indirect exposure. The likelihood of developing mental health issues can also be significantly increased by exposure to unfavorable economic, social, geopolitical, and environmental conditions like inequality, poverty, violence (including gender-based violence, domestic violence, and gun violence), and environmental degradation. These outside variables interact with personality features to further affect a person's mental health (WHO, 2022). The likelihood of getting post-traumatic stress disorder (PTSD) is significantly increased by exposure to violence [Kilpatrick et al., 2003; Fairbank & Fairbank, 2009; Fowler et al., 2009]. Some people may develop post-traumatic stress disorder (PTSD) after witnessing a shocking, terrible, or fatal event. Almost everyone will respond to trauma differently, and while most individuals will eventually get past the first symptoms, PTSD may be present in those who do not. Those with PTSD may worry or fear even when they are not in danger. (National Institute of Mental Health, 2022).

There has been little but growing empirical research on the prevalence of homicide survivorship or its relationship to mental disorders. In contrast, most studies on gun violence in Nigeria, such as (Seleye-Fubara & Bob-Yellowe, 2005; Akhiwu & Igbe, 2013; Seleye-Fubara & Etebu, 2011; Bassey et al., 2008; Thomas et al., 2005) have been based on findings on gunshot injuries, trauma, and fatalities. At the same time, studies (John et al., 2007; Wiwa, 2002; Olasoj et al., 2005) focused on ethnoreligious conflicts, guns, health and exploitation of natural resources, and assault cases, respectively. To the researcher's knowledge, few, if any, studies have examined, however, how gun violence affects survivors' mental health outcomes in Nigeria.

The aim of this investigation was motivated by the paucity of previous studies that objectively assessed the link between gun violence and its effects on Nigerians' mental health, particularly Post-Traumatic Stress Disorder (PTSD). There has been little but growing empirical research on the prevalence of homicide survivorship or its relationship to mental disorders. Limited studies have examined, however, how gun violence affects survivors' mental health outcomes in

Nigeria. The study's overarching goal is to evaluate the impact of gun violence on survivors' mental health in Jema'a LGA, Kaduna state.

2 Methodology

This cross-sectional study design utilized an adapted researcher-administered semi-structured survey to collect primary data from 399 participants.

A multi-stage sampling technique was used for this study, and Jema'a Local Government Area was purposively sampled out of the 23 Local Government Areas of Kaduna State due to proximity and security reasons. Kafanchan ward was selected via Simple Random sampling by balloting from the 12 wards of the Jema'a LGA.

Kafanchan ward has six main settlements, but Takau was selected for the research study via simple random sampling by ballooning without replacement. Takau settlement was grouped into eight clusters based on its different sub-settlements. Four sub-settlements were selected by balloting without replacement, from which all eligible participants were selected.

Age and gender socio-demographic data were categorized and identified. Using a closed-ended 4-point Likert scale questionnaire, criterion A of the Diagnostic Statistical Manual 5th Edition (DSM-5) (PCL-5), a provisional PTSD diagnostic tool adapted from a study by Zack et al., 2021, was used where patients injured in high-impact motor vehicle accident were assessed and Rachel et al., 2019 on PTSD and attitudes towards guns following interpersonal trauma. This poll asks participants about any problems they may have experienced after a very stressful incident that entailed serious bodily harm, sexual assault, or the fear of death.

2.1 Statistical Analysis

The study used frequencies, percentages, and descriptive statistics like mean and standard deviation. Correlation analysis quantified the size or strength of the association between the variables, while multiple regressions assessed the causal relationship between the dependent and independent variables. Version 20 of the Statistical Package for Social Science (SPSS) was used to examine the data.

3 Results

3.1 Data Presentation

The data gotten from the respondents are presented in tabular form to summarize and compare.

Table 1 Socio-Demographic Distribution of the respondents based on gender and age.

Variables	**Number (N)**	**Percentage (%)**
Male	250	62.7
Female	149	37.3
Age Interval	Frequency	Percentage %
18 - 28	288	72.2
29 - 39	83	20.8
40 - 50	17	4.3
51 - 60	11	2.8
Total	399	100
Options	Number	Percentage %
Total	399	100

Source: Researcher's survey 2024

Table 1. The study population consisted of 399 respondents, with a preponderance of males (62.7%), mostly aged 18-28 (72.2%).

Table 2 Responses regarding Prevalence of Gun Violence Exposure (PGV) and Public Health Intervention (PHI)

S/N	Questions	SD	%	D	%	A	%	SA	%	Total
1.	Have you experienced gun violence before?	9	2.3	17	4.3	103	25.8	270	67.7	399
2	Did it happen recently (between now and a year ago)?	25	6.3	14	3.5	94	23.6	266	66.7	399
3	Did it involve actual or threatened death, serious injury, or sexual violence?	15	3.8	20	5.0	104	26.1	260	65.2	399
4	I experienced gun violence directly	23	5.8	26	6.5	105	26.3	245	61.4	399
5	I witnessed it happen to someone	11	2.8	20	5.0	100	25.1	268	67.2	399
6	Is there a health facility in your locality with the primary aim to improve the mental health of survivors of gun violence?	260	65.2	90	22.6	43	10.8	6	1.5	399
7	Is there a community program that aims to improve the mental health of survivors of gun violence?	348	87.2	24	6.0	17	4.3	10	2.5	399

Source: Researcher's survey adapted from Criterion A of DSM-5

Table 2. Presents and summarizes responses to research questions on the prevalence of gun violence exposure. Responses were graded based on the respondents' opinions on each question as to whether they strongly agreed (SA), agreed (A), disagreed (D), or strongly disagreed (SD).

Most of the respondents strongly agreed (67.7%) that they had previously experienced gun violence, with the majority (66.7%) strongly agreeing that it happened within the past year. About 65.2% (260) of the respondents strongly agreed that it involved actual or threatened death, serious injury, or sexual violence. Most of the respondents, 245 (61.4%), strongly agreed that they experienced gun violence directly, with the majority (67.2%) strongly agreeing to witnessing it happen to someone else. Sixty-five percent of respondents mentioned that no health facility in the locality provides mental healthcare to survivors of gun violence. Another 87% of respondents also strongly disagreed about the existence of community programs aimed at improving the mental health of survivors of gun violence.

Table 3 Responses regarding PTSD

S/n	Questions	A little bit	%	Moderately	%	Quite a Bit	%	Extremely	%	Total
1	Repeated, disturbing memories, thoughts, or images of the gun violence experience?	9	2.3	15	3.8	99	24.8	276	69.2	399
2	Repeated, disturbing dreams of the gun violence experience?	15	3.8	28	7.0	122	30.6	234	58.6	399
3	Suddenly acting or feeling as if the gun violence were happening again (as if you were reliving it)?	13	3.3	33	8.3	81	20.3	272	68.2	399
4	Feeling very upset when something reminded you of the gun violence experience?	2	0.5	3	0.8	134	33.6	260	65.2	399
5	Having strong physical reactions (e.g., heart pounding, trouble breathing,	18	4.5	48	12.0	88	22.1	245	61.4	399

	sweating) when something reminded you of the gun violence experience?									
6	Avoiding memories, thoughts or feelings related to gun violence experience or avoiding having feelings related to it?	1	0.3	36	9.0	86	21.6	276	69.2	399
7	Avoiding external reminders of the gun violence experience (for example, people, places, conversations, activities, objects, or situations)?	9	2.3	38	9.5	86	21.6	266	66.7	399
8	Trouble remembering important parts of the gun violence experience?	17	4.3	28	7.0	99	24.8	255	63.9	399
9	Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?	9	2.3	15	3.8	99	24.8	276	69.2	399
10	Blaming yourself or someone else for the gun violence or what happened after it?	14	3.5	32	8.0	81	20.3	272	68.2	399
11	Having strong negative feelings such as fear, horror, anger, guilt, or shame?	13	3.3	35	8.8	79	19.8	272	68.2	399
12	Loss of interest in activities that you used to enjoy?	19	4.8	48	12.0	87	21.8	245	61.4	399
13	Feeling distant or cut off from other people?	200	50.1	69	17.3	60	15.0	70	17.5	399
14	Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?	121	30.3	98	24.6	92	23.1	88	22.1	399
15	Irritable behavior, angry outbursts, or acting aggressively?	9	2.3	38	9.5	86	21.6	266	66.7	399
16	Taking too many risks or doing things that could cause you harm?	199	49.9	70	17.5	60	15.0	70	17.5	399
17	Being “superalert” or watchful or on guard?	8	2.0	28	7.0	87	21.8	276	69.2	399
18	Feeling jumpy or easily startled?	2	0.5	35	8.8	85	21.3	277	69.4	399
19	Having difficulty concentrating?	17	4.3	28	7.0	99	24.8	255	63.9	399
20	Trouble falling or staying asleep?	19	4.8	47	11.8	88	22.1	245	61.4	399

Source: Criterion A of the Diagnostic Statistical Manual 5th Edition (DSM-5) (PCL-5)

Table 3: Reflects that 266 (69.2%) of respondents experienced repeated, disturbing memories, thoughts, or images of the gun violence experience. Over half (58.6%) experienced it extremely, with repeated, disturbing dreams of the gun violence experience. Additionally, 68.2% experienced sudden acting or feeling as if the gun violence was recurring. These findings suggest that over 50% of respondents experienced a gun violence incident.

The survey revealed that over 50% of respondents (65.2%) experienced feeling very upset when reminded of their gun violence experience, while most (61.4%) experienced strong physical reactions, such as heart pounding, trouble breathing, and sweating. Many respondents (69.2%) avoided memories, thoughts, or feelings related to the gun violence

experience or avoiding feelings related to it. Additionally, over 50% (66.7%) avoided external reminders of the experience, such as people, places, conversations, activities, objects, or situations. 63.9% of the respondents experienced extreme flashbacks of terrifying moments of the gun violence experience. The results suggest that over 50% of respondents experienced the gun violence experience in a significant way.

Several respondents, 276 (69.2%) experienced negative beliefs, blaming themselves or others for gun violence, and experiencing strong negative feelings. The majority (68.2%) blamed themselves or someone else for the violence. About 68.2% of the respondents experienced feelings of fear, horror, anger, guilt, or shame, while 61.4% lost interest in activities they used to enjoy. The majority (70.5%) felt distant or cut off from others, while only 30.3% experienced trouble having positive feelings, with a high level of difficulty in feeling happiness or loving feelings for people close to them.

This study also revealed that 66.7% of respondents experienced irritable behavior, angry outbursts, or aggressive behavior, while only 49.9% of respondents took unreasonable risks or did things that could cause harm. 69.2% experienced being "super alert" or watchful, with over 50% (69.4%) feeling jumpy or easily startled. A majority, 63.9%, had difficulty concentrating, with over 50% experiencing it. Over 50% (61.4%) also experienced difficulty falling or staying asleep. The survey revealed that more respondents experienced these issues than others, indicating a need for further research and intervention. The findings highlight the importance of understanding and addressing these issues to improve overall well-being.

3.2 Data analysis and result

Table 4 Descriptive Statistics

	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**	**Skewness**		**Kurtosis**	
	Statistic	**Statistic**	**Statistic**	**Statistic**	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
PGV	399	1.00	4.00	3.5243	0.75261	-1.707	0.122	-1.417	0.244
PTSD	399	1.00	4.00	3.3282	0.71975	-1.194	0.122	0.657	0.244
PHI	399	1.00	4.00	1.3534	0.65485	2.241	0.122	4.561	0.244
Valid N (listwise)	399								

Source: Researcher's computation from SPSS v20, 2023

The descriptive results presented in table 4.1 indicated the behavior of all the variables under study. Prevalence of Gun Violence (PGV) had a minimum value of 1 and a maximum value of 4. Prevalence of Gun Violence averaged 3.5243 with a standard deviation of 0.75261, implying that the data deviates by 2.77169. This suggests that the data is widely dispersed. Also, the skewness and Kurtosis values which stood at -1.707 and -1.417 respectively, indicating that, the variable is normally distributed since it is less than one (1).

Likewise, PTSD recorded a minimum of 1 and maximum of 4, while the mean and standard deviation stood at 3.3282 and 0.75261, respectively, implying that the data deviates by 2.57559. This suggests that the data is widely dispersed. Skewness and Kurtosis values which stood at -1.194 and 0.657 respectively, indicating that, the variable is normally distributed since it is less than one (1).

Public Health Intervention (PHI) had a minimum value of 1 and a maximum value of 4. The variable averaged 1.3282 with a standard deviation of 0.65485, inferring that the data deviates by 0.67335. This suggests that the data is widely dispersed. Also, the Skewness and Kurtosis values which stood at -0.298 and -1.120 respectively, indicating that, the variable is normally distributed since it is less than one (1).

Table 5 Correlations

		PV	PTSD	PI
PGV	Pearson Correlation	1	0.771**	0.342**
	Sig. (2-tailed)		0.000	0.000
	N	399	399	399
PTSD	Pearson Correlation	0.771**	1	0.477**
	Sig. (2-tailed)	0.000		0.000
	N	399	399	399
PHI	Pearson Correlation	0.342**	0.477**	1
	Sig. (2-tailed)	0.000	0.000	
	N	399	399	399

**. Correlation is significant at the 0.01 level (2-tailed). *Source: Researcher's computation from SPSS v20, 2023*

The Prevalence of Gun Violence (PGV) and PTSD have a strong and positive association, with a coefficient of 0.771, which is statistically significant at the 1% level. Similarly, PGV is significantly (also significant at the 1% level) positively and strongly related with Public Health Intervention (PHI), with a coefficient of 0.342. Additionally, there is a significant (significant at the 1% level) correlation between PHI and PTSD, with a value of 0.477.

According to Berry and Feldman (1985), none of the independent variables shows a strong link with one another based on a minimum threshold of 0.80, hence, all the variables investigated in the study satisfy this assumption.

Table 6 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.981[a]	0.962	0.961	0.14773

3.2.1 4.3 a. Predictors: (Constant), PHI, PTSD

Source: Researcher's computation from SPSS v20, 2023

The result, as shown in table 4.3.1, revealed an r-square value of 0.962 which implied that, 96.2% of the variation in Prevalence of Gun Violence (PGV) could be explained by the combination of the two independent variables post-traumatic stress disorder (PTSD), and Public Health Intervention (PHI). The remaining 3.8% variation could be explained by other factors not included in this study.

Table 7 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	216.792	2	108.396	4967.029	0.000[b]
	Residual	8.642	396	0.022		
	Total	225.434	398			

3.2.2 Predictors: (Constant), PHI, PTSD

Source: Researcher's computation from SPSS v20, 2023

The table also shows an F-statistic value of 4967.02, indicating a large contribution to the variability in the dependent variable from the collection of independent variables as a whole. Additionally, a significance level of 0.000 (0%), indicating that the total equation is significant at a level below the 5% threshold of significance, shows that there is a statistically meaningful association between growth and the group of predictor factors.

Table 8 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.129	0.035		3.680	0.000
	PTSD	1.094	0.012	1.046	93.414	0.000
	PHI	-0.181	0.013	-0.157	-14.040	0.000

3.2.3 Dependent Variable: PGV

Source: Researcher's computation from SPSS v20, 2023

Ho_1: PTSD associated to gun violence has no significant effect on survivors of gun violence in Jema`a LGA, Kaduna state.

The regression line PGV = 0.129 + 1.094PTSD indicated that, a unit increase in PTSD will lead to a 1.094 increase in growth (PGV) significantly. The result indicated that, PTSD has positive and significant effect on survivors of gun violence in Jema`a LGA, Kaduna state. The decision was reached based on the t-value and p-value of (p = 0.000, t-value = 93.414). Thus, this implies that the null hypothesis is rejected which stated that, PTSD associated to gun violence has no significant effect on survivors of gun violence in Jema`a LGA, Kaduna state.

Ho_2: Public Health Intervention has no effect on survivors of gun violence in Jema`a LGA, Kaduna State.

The regression line PGV = 0.129 + -0.181 PHI indicates that a unit increase or change in Public Health Intervention (PHI) will lead to a -0.181 increase in (PHI) significantly. The result indicated that public health intervention has a positive and significant effect on survivors of gun violence in Jema`a LGA, Kaduna state. The decision was reached based on the t-value and p-value of (p = 0.000, t-value = -14.040). Thus, this implies a rejection of the null hypothesis, which stated that, public health intervention has no effect on survivors of gun violence in Jema`a LGA, Kaduna state.

4 Discussion

Findings from the study indicate that gun violence has a positive and significant effect on the mental health of survivors in Jema`a LGA, Kaduna state. As such, an uncontrolled increase in gun violence will lead to an increase in PTSD. Hence, it is important to comprehend both the risk factors and protective factors for the mental health of young people (Fatori et al., 2017). This finding is in line with that of (Rothon, Stansfeld, Mathews, Kleinhans, Clark & Lund 2011; Coovadia, Jewkes, Barron, Sanders & McIntyre 2009), who reported that violence exposure is a significant risk factor that raises the possibility of developing post-traumatic stress disorder (PTSD).

This study revealed that public health interventions have a positive and significant effect on survivors of gun violence in Jema`a LGA, Kaduna state. Increasing access to health and public health facilities will lead to a decrease in the chances of developing long-term PTSD. Hence, in order to foster resilience, reduce risks, and establish environments that are supportive of mental health, preventions, promotion, and identifying the structural, individual, and social determinants of mental health and setting up strong public health interventions measures will be necessary. This finding is in line with that of WHO's " The Comprehensive Mental Health Action Plan 2013–2030" which strives to enhance mental health by bolstering effective leadership and governance, offering comprehensive and integrated community-based care that is responsive to individuals' needs, implementing strategies for promotion and prevention, and enhancing information systems, evidence, and research. (Kramer & Landolt 2011) also found in their studies that early psychological therapies can be helpful in treating PTSD.

4.1 Limitations

The study was limited to how gun violence affected survivors' Post-Traumatic Stress Disorder (PTSD) in Jema'a LGA, Kaduna state. According to Rothon, Stansfeld, Mathews, Kleinhans, Clark & Lund 2011; and Coovadia, Jewkes, Barron, Sanders, and McIntyre 2009, after trauma, practically everyone typically experiences a variety of emotions, albeit most people naturally get over the initial symptoms. Exposure to violence is a substantial risk factor that increases the potential of developing post-traumatic stress disorder (PTSD), although most people naturally get over the initial indicator. Those who still experience problems may have PTSD. Since approximately a dozen outbursts of violence, particularly in the southern part of Kaduna State, there has been strong religious and racial segregation.

5 Conclusion

In conclusion, this dissertation has delved into the intricate relationship between gun violence and mental health outcomes in the southern Kaduna region, with a specific focus on Jema'a Local Government Area (LGA). The findings underscore the profound impact of gun violence on the well-being of individuals, particularly in the context of post-traumatic stress disorder (PTSD) and other mental health conditions (Rothon et al., 2011; Coovadia et al., 2009). Through an extensive examination of historical, geographic, and demographic factors, this study has contributed to a nuanced understanding of the complexities surrounding gun violence and its repercussions on mental health within the region.

The prevalence of gun violence in Jema'a LGA emerged as a significant concern, emphasizing the urgent need for targeted interventions. The study not only shed light on the mental health challenges faced by survivors but also highlighted the effectiveness of ongoing health interventions in ameliorating these challenges. Moreover, the comparative analysis with international studies has provided valuable insights that can inform tailored approaches to mental health support, considering the unique cultural and historical context of southern Kaduna.

Recommendations

- Building upon the insights garnered from this study, several key recommendations are proposed to address the identified challenges and enhance the well-being of individuals affected by gun violence in southern Kaduna:
- Community-Centric Mental Health Interventions: Implement and strengthen community-based mental health interventions that are culturally sensitive and tailored to the specific needs of individuals in southern Kaduna. This could include support groups, counseling services, and awareness campaigns.
- Longitudinal Mental Health Studies: Conduct longitudinal studies to track the long-term mental health outcomes of survivors, providing a comprehensive understanding of the evolving nature of mental health challenges over time.
- Government Policy Reforms: Advocate for policy reforms at the governmental level to address the root causes of gun violence, focusing on conflict resolution, peace-building, and the prevention of ethnoreligious tensions in the region (Chatham House, 2017).
- Enhanced Access to Mental Health Services: Improve access to mental health services by establishing mental health clinics, increasing the number of mental health professionals, and destigmatizing mental health issues within the community.
- Educational Initiatives: Implement educational programs to raise awareness about mental health, emphasizing the importance of seeking help and dispelling stigmas associated with mental health conditions (Petel *et al.,* 2007).
- Collaboration with NGOs and International Organizations: Foster collaboration between local authorities, non-governmental organizations (NGOs), and international entities to pool resources, share best practices, and enhance the overall effectiveness of mental health interventions.
- Drawing inspiration from successful initiatives in other conflict-affected regions, these recommendations aim to create a comprehensive framework for improving mental health outcomes and fostering resilience among individuals affected by gun violence in southern Kaduna.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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