



RESEARCH ARTICLE

ROAD SAFETY EDUCATION: A TOOL FOR REDUCING TRAFFIC ACCIDENTS AND ENHANCING PUBLIC SAFETY IN NIGERIA

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ABSTRACT

Road Safety Education (RSE) is a low-cost high impact approach to reducing Road Traffic Accidents (RTAs) and enhancing public safety. This paper explores the concepts of RSE, its objectives and importance. It critically analyzes theoretical frameworks underpinning RSE. The paper synthesizes recent evidence on Nigeria's RTA burden, evaluates the effectiveness of RSE interventions, identifies implementation barriers, and recommends scalable strategies for policy and practice. Methods include a structured literature review of the peer-reviewed studies and policy reports, and analysis of national datasets and country profiles from authoritative bodies. Results show Nigeria bears a disproportionate share of road traffic fatalities and injuries driven by speeding, risky driving, poor vehicle maintenance, road way deficiencies, and weak post-crash care. Empirical studies demonstrate that targeted RSE integrated within schools, driven-training programmes and community campaigns-improves knowledge, attitudes and self-reported safety behaviors, and can reduce crash risk when combined with enforcement and safer infrastructure. However, gaps in program coverage, inconsistent curricula, limited funding, data weaknesses, and low institutional coordination undermine impacts. To accelerate progress, Nigeria should adopt a national RSE framework aligned with the decade of Action for Road Safety, strengthen data systems, institutionalize RSE in formal education and licensing and secure sustainable financing. With coordinated action across sectors, scaled RSE can contribute substantially to lowering RTAs and improving population safety in Nigeria. Urgent political commitment is essential.

Keywords: Road safety education, road traffic accidents, public safety, prevention, Nigeria,

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INTRODUCTION

Road traffic accidents (RTAs) are a leading cause of death, disability, and economic loss worldwide, with low and middle-income countries bearing a disproportionate share of the burden (World Health Organization (WHO), 2023). Nigeria remains among countries with high rates of road traffic fatalities and injuries driven by multiple interacting factors including driver behaviors (speeding, impaired driving) inadequate enforcement, vehicle defects, poor road design and insufficient post-crash care (WHO, 2023 & FRSC, 2024).

National statistics and system reports indicate persistent high fatality rates per 100,000 population, well above global averages and significant year-to-year variability in reported counts due to reporting gaps and data fragmentation (NBS, 2024). In Nigeria, thousands die annually due to preventable road accidents mainly attributed to human errors and poor road safety awareness. Road Safety Education (RSE) is a proactive intervention that seeks to equip individuals especially young learners and drivers, with knowledge and attitudes necessary for responsible behavior on the road (Eke, 2020).

Road Safety Education in Nigeria refers to the systematic dissemination of knowledge and skills aimed at equipping road users with the information necessary to ensure safety on the roads. This includes understanding traffic rules and regulations, identifying road signs and symbols, learning defensive driving techniques and developing responsible behaviors as drivers, passengers, cyclists and pedestrians. The importance of road safety education has become increasingly evident in Nigeria due to the high incidence of road traffic crashes (RTCs) which remain a leading cause of injury and death. According to the World Health Organization (2023), Nigeria has one of the highest road traffic fatality rates in Africa, with an estimated 21.4 deaths per 100,000 population. In response, the Federal Road Safety Corps (FRSC), established in 1988 has continued to lead nationwide road safety campaigns and school outreach programs to promote awareness and behavioral change among all categories of road users (FRSC, 2022).

Road safety education (RSE) aims to change road user knowledge, attitudes and behaviors. Road safety education is implemented through multiple platforms including formal and informal instruction (in schools, driver training centers, road safety club, community engagement initiatives, workplaces, and mass media). When combined with enforcement, safer vehicles and infrastructural improvements (the so-called ‘Safe System’ approach), RSE initiatives exist at multiple levels FRSC-led public campaigns, school based programs, and NGO/ Community activities but coverage is uneven and integrated national frameworks are limited, which constrains impact (FRSC, 2024).

This paper discusses the necessity of RSE, its theoretical underpinning and also addresses three questions: 1) What is the current burden and pattern of RTAs in Nigeria? 2) What evidence exists on the effectiveness of RSE interventions in Nigeria and comparable settings?



3) What practical, scalable strategies can strengthen RSE to reduce RTAs and enhance public safety? To answer these questions, peer-reviewed studies, government and international reports and program evaluations were underpinned to provide evidence-based recommendations for policy and practice in Nigeria.

CONCEPTUAL FOUNDATION AND THEORETICAL FRAMEWORK

Clarification of Concepts

- **The Concept of Road Safety Education (RSE)**

Road Safety Education (RSE) refers to the systematic dissemination of information and training aimed at enhancing road users understanding and adherence to traffic rules and safety practices (Ajayi & Bello, 2019). It includes formal school curricula, informal community programs, and public awareness campaigns that foster safe road behavior.

- **The Concept of Road Traffic Accidents (RTAs)**

Road Traffic Accidents (RTAs) are incidents involving vehicles that lead to injury or death. Most RTAs are preventable and often result from human error, poor infrastructure and inadequate enforcement of traffic laws (Federal Road Safety Corps (FRSC), 2022).

Theoretical Framework

Several theories explain the connection between road safety education on traffic accident reduction. For this study the Health Belief Model (HBM) theory by Rosenstock (1994) and the Theory of Planned Behavior (TPB) by Ajzen (1991) were employed. The Health Belief Model (HBM) theory suggest that people will take preventive action if they perceive themselves to be at risk of a serious condition and believe that a specific action would initiate that risk. In Road Safety Education (RSE), the perceived risk of accidents can motivate safe behavior. The Theory of Planned Behavior (TPB) postulated that behavior is influenced by intentions which are shaped by attitudes, subjects, subjective norms and perceived behavioral control. RSE aims to positively affect these determinants among road users. Both theories are crucial in road safety education because they help explain why individuals take or avoid safety actions and guide educators and policy makers in designing effective interactions. They encourage the integration of psychological, social and behavioral factors in promoting responsible road use, thereby reducing accidents and enhancing public safety.

METHODOLOGY

This study adopts a qualitative descriptive research design hence it is a non-experimental in nature. The data were from secondary sources such as journal, articles, WHO reports, FRSC publications, and internet on road safety policies and educational strategies implementation



both developed and developing nations to identify best practices. For each source, information on study design, population, intervention components, measured outcomes, (knowledge, attitudes, behaviors, crash rates) and implementation challenges. National data provided aggregate indicators (facilities, crash rates, trends). Data generated was analyzed using content analysis which involves rigorous examination of written records in a critical, descriptive and explanatory manner in order to derive, generalization and meaning from such written documents and records.

DISCOURSES

Objectives of Road Safety Education in Nigeria

The primary objectives of Road Safety Education in Nigeria are as follows:

- **To Promote Awareness of Traffic Rules and Regulations:** Road Safety Education aims to sensitize the public especially young people and drivers on traffic law and especially young people and drivers on traffic law and the consequences of violations (Okonkwo & Eze, 2021).
- **To reduce Road Traffic Crashes and Casualties:** Educating road users on safe practices contribute significantly to minimize the frequency and severity of road traffic accidents.
- **To instill Safe Driving Culture and Attitudes:** Through road safety education, individuals develop responsible attitudes and respect for other road users. Thus promoting harmonious road use.
- **To encourage the use of Safety Devices:** Awareness campaign encourage the use of helmets, seat belts and child safety seats thereby reducing the risk of injury or death in accidents.
- **To build a Knowledge-Based Road Safety System:** Education lays the foundation for evidence-based policies and community-driven road safety practices (Chukwu & Ibrahim, 2022).

Importance of Road Safety Education in Nigeria

Road safety education is of immense importance to the Nigerian society. Its relevance can be summarized under the following points:

- **Saving Lives and Reducing Injuries:** Road safety education helps reduce the human toll associated with road traffic crashes by equipping road users with life saving information (WHO, 2023).
- **Promoting Safer Roads and Communities:** Educated road users make informed decisions that contribute to safer road environments for all, including vulnerable groups such as children and the elderly.



- **Enhancing Economic Productivity:** Road traffic injuries often result to loss of income and economic burdens for families and the nation. Educating the public helps reduce these preventable losses (Adeboye & Olawale, 2023).
- **Empowering Youth through School-based Programs:** Road safety clubs and school education programs empower children and adolescents to become advocates and practitioners of safe road use (FRSC, 2022).
- **Strengthening National Development:** A safe transport system facilitates smooth movement of people and goods, which is critical to economic development and national stability (Olowoseje & Nwachukwu, 2023).
- **Fulfilling Global Commitments:** Road Safety Education supports Nigeria's commitment to the United Nations' Sustainable Development Goals (SDGs), particularly SDG 3 (Good Health and Well-being) and SDG II (Sustainable Cities and Communities) (WHO, 2023).

Burden and Pattern of RTAs in Nigeria

World Health Organization (WHO) and reporting indicate a high burden of Road Traffic Accidents (RTAs) in Nigeria. The WHO Global Status report, 2023 documented that road traffic deaths remains a major global cause of injury and that many low, and middle income countries, including Nigeria, have mortality rates above the global average (WHO, 2023). Country specific profiles highlight key drivers' excessive speed, non-use of seatbelts and helmets, driving under the influence of alcohol, poor vehicle roadworthiness and inadequate infrastructure and enforcement (WHO, 2023).

National sources show substantial human and economic costs. For instance, Federal Road Safety Corps (FRSC) publications and Nigeria transport data reported thousands of crashes and several thousand fatalities annually in recent years, specific incident reports continue to document large-scale fatal crashes (e.g. tanker explosions, multi-vehicle pileups), underscoring systemic vulnerabilities (FRSC, 2024 & NBS, 2024). The FRSC has documented recurring patterns of heavy-vehicle crashes involving commercial passenger vehicles and peak-time incident clusters. Under-reporting remains a critical problem cross-check between police, health facility, and FRSC data often reveal discrepancies, suggesting that official counts may underestimate the true mortality and morbidity burden. This undermines targeted planning and resource allocation (Global Road Safety Facility, Nigeria Institutional Analysis). Improving data systems is therefore a priority to guide RSE targeting.

Evidence on the Effectiveness of Road Safety Education on Knowledge, Attitudes and Behavior change

Studies conducted in Nigerian settings (e.g. Interventions among drivers in Lagos) and comparable LMIC contexts indicate that structured RSE interventions improved knowledge and self-reported safety behaviors. For example an education intervention among drivers in



Lagos State demonstrated gains in knowledge of prevention measures and intentions to adopt safety behaviors post-intervention (Study reported in, 2023). School based programs elsewhere in sub-Saharan Africa show increased helmet and seatbelt use when combined with incentives and community engagement.

Impact on Crash Rates

Direct evidence that education alone reduces crash rates is mixed. Road Safety Education (RSE) is more consistently effective at changing proximal outcomes (knowledge, attitudes) than distal outcomes (Crash incidence) unless paired with enforcement and engineering measures. Evaluations from LIMICs generally show the strongest reductions in injuries when education is part of multi-component interventions (education + enforcement + infrastructure). The World Health Organization (WHO) emphasizes the Safe System approach; education complements but does not substitute for safer roads, safer vehicles and strong enforcement (WHO, 2023).

Cost-effectiveness and Scalability

Road Safety Education (RSE) interventions (School curricula, mass media campaigns) are relatively low cost compared to large infrastructural projects but can be rapidly deployed, suggesting favorable cost-effectiveness when carefully designed and targeted. However, cost-effectiveness improves markedly when RSE is integrated into broader programmes e.g. licensing reforms, enforcement campaigns and vehicle inspections regimes. Economic analyses in Nigeria are limited. This represents a search gap.

Implementation Challenges and Contextual Barriers in Nigeria

Key barriers identified across literature and policy reports include:

Fragmented institutional arrangements: Multiple agencies (FRSC, police, transport ministries, state governments, etc.) share responsibilities without a single coordinating authority for RSE nationwide, leading to duplication and inconsistent messaging. The Global Road Safety Facility's institutional reviews highlight the need for coherent institutional models and single organization approaches to improve coordination (GRSF, 2023).

Inconsistent circular and quality control: RSE content varies widely across programmes and drivers training centres; curricula are often not standardized, reducing fidelity and measurable outcomes.

Data limitations: Incomplete crash reporting and weak monitoring and evaluation (M&E) systems hinder evidence-based targeting and assessment of RSE impact. National Bureau of Statistics and FRSC datasets show inconsistencies in coverage and indicators definitions (NBS, 2024).



Funding and sustainability: Short-term donor-funded campaigns lack sustainable financing for continuous school programmes or institutionalization in teacher training.

Cultural and socio-economic factors: Low risk perception, economic pressures that favour risky driving behaviors (e.g. speeding to maximize trips), and socio-cultural norms influence uptake of safety behaviors. Targeted RSE must therefore be context-sensitive.

Enforcement gaps: Weak or inconsistent enforcement of traffic laws reduces the perceived costs of unsafe behavior, weakening education messages. RSE's effect increases when sanctions and consistent enforcement are visible.

Program Design Features Associated with Success

Synthesis of evaluations and program reports identifies design features that strengthen RSE effectiveness:

Integration with curricula: Embedding RSE into formal school curricula (primary and secondary) with age-appropriate modules yields sustained exposure and normative change among young road users.

Multi-sectoral partnerships: Programs that bring together educational authorities, transport agencies, law enforcement, NGOs, and local communities achieve broader reach and complementary enforcement or infrastructure actions.

Practical skills-based training: Practical workshops (on hazard perception, safe crossing, helmet fitting) coupled with simulations or supervised on-road practice are more effective than lecture-only formats.

Monitoring and evaluation: Built-in M&E with standardized indicators and baseline/endline measures allows assessment of knowledge and behavior change and informs iterative improvement.

Use of mass media and community champions: Reinforces classroom messages and reaches non-school populations such as commercial drivers and motor-cyclists.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Nigeria faces a heavy and persistent burden of road traffic accidents, with complex drivers spanning behavior, infrastructure, vehicle standards, and post-crash care. Road safety education is a necessary and relatively low-cost component of a comprehensive response. It reliably improves knowledge and attitudes and, when integrated into multi-component programs with enforcement and infrastructure changes, contributes to reductions in injuries and fatalities. However, fragmented institutional arrangements, inconsistent curricula, data weaknesses, and limited sustainable funding hinder RSE impacts in Nigeria. To harness the



full potential of RSE, Nigeria should adopt a coordinated national framework with institutionalized RSE in formal education and driver licensing.

Scale targeted programs for high-risk groups, and ensure education is combined with enforcement and engineering under the Safe System approach. Strengthening crash data systems and embedding rigorous monitoring and evaluation will allow adaptive management and demonstrate returns on investment. With political commitment, adequate financing and cross-sectoral coordination, scaled RSE can be a pivotal tool to reduce RTAs and enhance public safety across Nigeria.

Recommendations

The policy and program perspectives for Nigeria based on the evidence synthesized in the preceding sections, the following priority actions are recommended:

Adopt a national RSE framework and institutionalized lead: Establish a coordinated national RSE policy, designate lead agency or single organization model for road safety education coordination, and create a national curriculum standard for RSE across schools and driver centers. Institutional harmonization will reduce duplication and ensure consistent messaging.

Integrate RSE in formal education: Introduce compulsory, age-appropriate RSE modules in primary and secondary curricular, supported by teacher training and resource materials. School-based programming builds long term normative changes and prepares future road users.

Scale targeted interventions for high-risk groups: Design tailored programs for commercial drivers, motorcyclists (okada riders) and school children in high-risk corridors. Use practical skills-based content and continuous refresher training for drivers.

Link RSE with enforcement and engineering: Coordinate education campaigns with visible enforcement (speed control, helmet and seatbelt checks) and priority engineering fixes (pedestrian crossing, road markings) to amplify behavior change. The Safe System approach must guide investments.

Strengthen data system and M & E: Improve crash reporting linkages between police, FRSC, and health facilities; adopt standardized indicators and digital reporting require M&E components in all RSE programs to measure proximal and distal outcomes.

Secure sustainable financing: Allocate dedicated national and sub-national budget lines for RSE and explore public-private partnerships and donor alignment to move beyond adhoc campaigns. Economic evaluations should be commissioned to demonstrate return on investment.



Community engagement and behavior change communications: Use culturally appropriate mass media, local influencers and community dialogues to shift norms and reduce risk.

Research and evidence gaps: Priority research areas include rigorous evaluations measuring the effect of RSE on crash incidents in Nigerian contexts. Cost effectiveness analyses, and implementation science studies to identifying best mechanisms for institutionalizing RSE across diverse states. Improved routine data on crashes, injuries and near misses is essential to target interventions and track progress.

Competing Interest

The authors have declared that no conflicting interest exist in this manuscript.

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