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# An observational study of road safety around selected primary schools in Ibadan municipality, Oyo State, Southwestern Nigeria

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## Abstract

**Background/ Objective:** Child pedestrians have been identified as vulnerable road users. Although walking as a means of transport has health and other benefits, it exposes children to the risk of road traffic injuries. This study was conducted to assess the availability of road safety features around government-owned primary schools in Ibadan municipality.

**Materials and Methods:** A multistage sampling technique was used to select 46 of the 74 schools in the study area. Some (11) of the selected schools were sited within the same premises and shared a common entrance; thus a total of 35 school premises were eventually observed. Trained research assistants observed the school environment around the selected schools for road safety features such as location of schools, presence of “school”, “child crossing” and “speed limit” road signs, and presence of traffic calming devices (road bumps or zebra crossing).

**Results:** Five (14%) of the schools were located on major roads and eight (23%) had road signs indicating that a school was nearby. Seven (20%) had road bumps close to the school, 15 (43%) had a warden who assisted children to cross, and none had a zebra crossing. Five (14%) schools had pedestrian sidewalks.

**Conclusions:** The study revealed that the environment around a number of the observed schools in the municipality compromised the pupils’ road safety. The local government, school authorities, parents, and road safety professionals need to institute definite measures to enhance the road safety environment around schools in the municipality.

**Keywords:** Child pedestrian, primary schools, road safety

## Résumé

**Fond / objectifs:** Les piétons enfant ont été identifiés comme usagers vulnérables de la route. Bien que la marche comme un moyen de transport ont la santé et autres avantages, elle expose les enfants à risque d'accidents de la route. Cette étude a été réalisée afin d'évaluer la disponibilité des caractéristiques de sécurité routière autour des écoles primaires publiques commune d'Ibadan.

**Des matériaux et des procédés:** Une technique d'échantillonnage à plusieurs étapes a été utilisée pour sélectionner les 46 74 écoles dans la zone d'étude. Certains (11) des écoles sélectionnées étaient situées dans les mêmes locaux et partagé une entrée commune ; ainsi, un total de 35 locaux de l'école ont été finalement fait remarquer. Une formation de recherche assistants observé que l'environnement scolaire dans les écoles sélectionnées pour la sécurité routière caractéristiques telles que l'emplacement des écoles, présence de « school », "enfant crossing" et « vitesse limite » panneaux de signalisation routière et présence d'apaisement des dispositifs (route bosses ou passage clouté) de la circulation.

**Résultats:** Cinq (14 %) des écoles ont été localisés sur les routes principales et huit (23 %) avaient des panneaux de signalisation routière indiquant qu'une école est à proximité. Sept bosses de la route près de l'école, 15 (43 %) (20 %) avaient un gardien qui a aidé les enfants à traverser, et aucun n'avait un passage clouté. Cinq écoles (14 %) avaient des trottoirs pour piétons.

**Conclusions:** L'étude a révélé que l'environnement autour d'un certain nombre des écoles observées dans la municipalité de compromis la sécurité routière des élèves. Le gouvernement local, les autorités scolaires, les parents et les professionnels de la sécurité routière ont besoin d'instituer des mesures précises pour améliorer l'environnement de sécurité routière autour des écoles de la commune.

**Mots clés:** Pour piétons, les écoles primaires enfant, sécurité routière

## Introduction

According to World Health Organization (WHO) estimates, more than 260,000 children die and up to 10 million are injured in road crashes each year. The overwhelming majority of deaths – about 93%, occur in low and middle income countries.<sup>[1]</sup> Children are mainly involved in road traffic injuries as passengers or pedestrians.<sup>[2]</sup> Factors increasing susceptibility of children to involvement in road crashes include the following: defective road environment including excessive traffic volumes, inefficient, and unsafe public transport systems, inappropriate speed of vehicles, poor land use and networking, lack of separation of road users, and mixed land use where houses, schools, and commercial outlets are erected.<sup>[1,3-6]</sup> Children are also vulnerable to pedestrian injury because their small size makes it difficult for them to view surrounding traffic and also makes it difficult for drivers to see them; they are active, energetic, and often impulsive. In addition, they do not have the physical and cognitive skills required to make safe judgments and choices about traffic on their own until they are about 10 years.<sup>[2,6]</sup> In addition, children are also involved because in some countries, they live, work, and play on the streets.<sup>[1]</sup> Child pedestrian injury rates have been found to be highest in Africa and Asia and this has been attributed to the fact that many of them walk to school.<sup>[7,8]</sup>

Walking is considered part of an active lifestyle and has been associated with health benefits.<sup>[9]</sup> A disadvantage of walking to school however is the fact that it exposes children to the risk of pedestrian injury while walking. A hospital based study in Tanzania found that over 73% of children injured by road traffic were walking to and from school.<sup>[10]</sup> The proportion of children walking has thus reduced in some countries such as the United States with one-third of parents reporting traffic-related danger as a barrier to walking to school.<sup>[11]</sup> Findings from a hospital-based study on the pattern and socioeconomic implications of road crashes in Southwestern Nigeria by Ipingbemi revealed that 5.5% of road traffic injury (RTI) victims admitted

into hospital were aged 0–15 years.<sup>[12]</sup>

Interventions to protect child pedestrians have been implemented in many countries.<sup>[13,14]</sup> Some of these have focused on modification of children's behavior while they are on the road, while others have focused on modification of the traffic environment.<sup>[13]</sup> Generally, educational efforts targeted at improving children's road safety knowledge and practices have been found to result in limited effects on the long-term behavior of children.<sup>[14,15]</sup> As a result, a great deal of attention has shifted to environment modification such as utilizing speed limit signs or stop signs and other traffic calming strategies, e.g., the erection of speed humps, street closures, creating one-way streets near schools, median barriers, miniroundabouts, and designated pedestrian crossings.<sup>[1]</sup>

This study was conducted to describe and assess the availability of road safety features around government-owned primary schools in Ibadan municipality. Findings would inform development and enforcement of road safety policies to protect the lives of pupils in the school vicinity.

## Materials and Methods

An observational study was conducted. Ibadan municipality consists of five (5) local government areas (LGAs). The municipality has a population of about 704,431 children aged 15 years and below. One of the five LGA in the municipality – Ibadan North was selected using simple random sampling technique. A list of the government-owned primary schools in Ibadan North LGA was obtained from the State Primary Education Board. Within the municipality, two or more schools are sometimes located within the same compound. Using a table of random numbers, 46 of the 74 primary schools in the study area were selected. Some (11) of the selected schools were sited within the same premises and shared a common entrance; thus a total of 35 school premises were eventually observed. Trained research assistants observed the environment around the schools for road safety features and documented

findings on a semistructured observational checklist.

Observations made included:

- i. location of the school – on a major road or minor road;
- ii. presence of road sign showing that a school was close by or that children are crossing;
- iii. presence of a speed limit sign;
- iv. presence of traffic calming devices (road bumps or zebra crossing);
- v. presence of a warden assisting children to cross the road;
- vi. designated parking space for cars coming into the school;
- vii. presence of a pedestrian pavement/sidewalk; and
- viii. presence of overgrown trees close to the school entrance which could obscure vision.

Permission to conduct the study was obtained from the Office of the Local Government Medical Officer of Health. Data were analyzed using SPSS version 16.

## Results

Generally, road safety features around the vicinity of the observed schools were insufficient [Table 1]. The school entrances of five (14%) of the schools were located on major tarmac roads, while for the remaining 30 (86%), the entrances opened onto side-roads. Of the five schools sited on major roads, two were on dual carriageway roads and two were on hilly terrains. Eight (23%) of all the observed school road environments had a road sign which indicated that a school was nearby, one had a road sign indicating that children were crossing, and none had any speed limit sign.

Seven (20%) schools had road bumps close to the school; 15 (43%) had a warden who assisted children to cross. The warden was a volunteer staff in 12 (80%) schools, an older student in 2 (13%) schools, and a police traffic warden in 1 (7%) school. None of the school road environments observed had a zebra crossing. Five (14%) school environments had pedestrian sidewalks and four (11%) had a number of overgrown trees close to the gate which affected visibility. Twenty (57%) schools had designated parking spaces for vehicles coming to the school though it was observed that the majority of the children walked to school and that the parking spaces were mainly utilized by the school staff.

## Discussion

The study revealed that about half of the observed

**Table 1: Availability of road safety features around the premises of schools observed**

Road safety features present	Number of schools (%)
School properly sited with entrance on a side-road	30 (85.7)
Road sign depicting presence of a school	8 (22.9)
“Children crossing” road sign	1 (2.9)
Speed limit road sign	0 (0)
No trees obscuring entrance	31 (88.6)
Road bumps	7 (20.0)
Traffic warden	15 (42.9)
Designated parking space	20 (57.1)
Pedestrian sidewalk	5 (14.3)

schools were largely unsafe as regards road safety of the pupils. Studies conducted in other developing countries have revealed inadequate pedestrian road safety features around schools.<sup>[16,17]</sup> Developed countries have taken the lead in road safety issues and are thus the target of most child–road injury policies and control programmes. This could be because developing countries are still faced with problems resulting from communicable diseases. Unfortunately, noncommunicable diseases are becoming a source of concern in developing countries and if left uncurbed, have the potential of attaining epidemic proportions.

On the whole, schools in Ibadan, like those in other developing countries, had insufficient road safety features for instance, 15% of schools in Ibadan compared with 36% of schools in Jordan and 90% of schools in Uganda were located on a main road.<sup>[16,17]</sup> About 23% of schools in Ibadan had road signs depicting that a school was nearby compared with 47% of Jordan schools and 5% of Ugandan schools. In addition, 20% of observed schools in Ibadan had speed bumps compared with about 70% in Jordan and none in Uganda.<sup>[16,17]</sup> Forty-three percent of schools in our study had a warden (who was either a police traffic warden, a member of staff of the school or an older pupil) who assisted pupils to cross the road compared with 50% of Ugandan schools that reportedly had policemen who assisted children to cross.

## Conclusions

The study revealed that road safety conditions around primary schools in the municipality were grossly inadequate and unduly exposed the pupils to the risk of road crashes and subsequent injuries. Not only are children physically and mentally immature to handle road traffic situations, they are unable to advocate for child-friendly road designs and have to rely on adults to do this for them.

Equipment/features such as road bumps, zebra

crossings, and road signs required to ensure road safety around schools are basic and relatively inexpensive to construct and maintain especially when compared to the costs of road traffic injuries to pupils and nation at large. In view of the study findings, urgent action needs to be taken by the local government authorities to ensure that basic road safety features are put in place and maintained around schools in the municipality to ensure safety of pupils on their way to or from school.

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