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Journal of Transport & Health

journal homepage: www.elsevier.com/locate/jth

Pedestrian crossing in urban Ghana: Safety implications

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ARTICLE INFO

Article history:

Received 19 January 2016

Received in revised form

19 June 2016

Accepted 19 June 2016

Available online 21 July 2016

Keywords:

Pedestrian safety

Pedestrian behaviour

Ghana

Transport

Crosswalks

ABSTRACT

Pedestrian fatalities constitute 42% of road traffic fatalities in Ghana, and 68% of the total pedestrian fatalities are related to pedestrian crossing facilities and behaviour. This study examines the state of pedestrian crossing facilities (crosswalks) and behaviour on urban roads in Ghana, and its consequences on pedestrian safety, using New Juaben Municipality as a case study area. A 5-year road traffic collision data, information on the condition and utilisation of crosswalks and pedestrians' perceptions of crosswalks located at different land uses were collected and analysed. Findings show that 98% of pedestrian collisions occurred in locations further away from crosswalks. In addition, accessibility of the crosswalks was a challenge to many urban residents, particularly the disabled, children and pregnant women. Pedestrian behaviour was found to be central to the numbers and extent of pedestrian collisions. Major factors associated with pedestrian behaviour include time of walking, fatigue, place of walking, inappropriate crossing points and the influence of alcohol and drugs. This study concludes that pedestrian safety appurtenances should be installed to encourage pedestrian and driver compliance, as well as public education campaigns to encourage behavioural change amongst pedestrians and drivers.

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1. Introduction

There is growing international concern and recognition of the poor transport services across developing countries and the implications for urban areas, particularly in Africa, where cities are growing rapidly and there is a high incidence of urban poverty (Banister, 2008; World Health Organisation [WHO], 2009). The literature points to the need for urgent measures, including investment in transport infrastructure and capacity, to adequately deal with urban management challenges and respond to the transport needs of the growing population. In addition, a growing number of case studies have reported on the vulnerabilities of pedestrians in urban areas of developing countries (e.g. Amoako et al., 2014; Damsere-Derry et al., 2010; Lasmini & Indriastuti, 2010; Mfinanga, 2014; Takamine, 2004; World Bank, 2002). However, Amoako et al. (2014) had limited insight into the relationship between pedestrian infrastructure and pedestrian safety in urban areas in developing countries, particularly Africa. For example, Ribbens et al. (2008) reported that in South Africa, the provision of pedestrian facilities during planning and construction of road projects is often neglected, and they are considered as ancillary if they incorporated in the planning stage, thus threatening pedestrian activities (WHO, 2013). Similarly,

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in Asian cities, [Leather et al. \(2011\)](#) explained that provision of pedestrian facilities has been unsuccessful due to lack of financial resources to meet the growing population demand, contributing to pedestrian collisions. This study aims to fill part of this gap by examining the state of pedestrian crossing facilities (crosswalks) and behaviour on roads in urban Ghana, and its consequences on pedestrian safety.

The reason for examining the state of pedestrian crossing facilities and behaviour derives from the fact that in many developing countries, particularly those in Africa, road transport remains the dominant and commonest mode of transport after walking. For example, in Ghana, road transport remains the major mode of transport after walking, and accounts for about 98% of motorised transport with the 2% comprising air, water and rail transport ([National Road Safety Commission \(NRSC\), 2013](#)). Passenger and freight transport in Ghana is mostly provided by road through public transport services including taxis, mini-buses (locally referred to as trotros), large buses and freight trucks (NRSC, 2013; [Poku-Boansi, 2008](#)). There are increased pedestrian activities in developing countries ([Amoako et al., 2014](#); [Damsere-Derry et al., 2010](#); [Mfinanga, 2014](#)). As reported by the [World Bank, \(2005\)](#), pedestrian walking accounts for 81% of all trips in Dakar (Senegal), 70% in Addis Ababa (Ethiopia), 60% in Bamako (Mali) and Niamey (Niger), 47% in Nairobi (Kenya) and 42% in Ouagadougou (Burkina Faso). While walking is encouraged in many geographical jurisdictions, particularly in the developed countries as strategy to improve healthy living, unfortunately in urban Africa, the increase in the use of motorised transport and pedestrian activities is challenged by limited pedestrian infrastructure, which puts the lives of pedestrian at risk ([Damsere-Derry et al., 2010](#)). As reported by [Amoako et al. \(2014\)](#), there has been an increase in road traffic collisions particularly pedestrian–vehicular collisions. Estimates from the World Health Organisation (WHO) suggest that pedestrians, cyclists and motorcyclists constitute almost 50% of the world's annual road traffic fatalities, and > 90% of these fatalities occur in low- and middle-income countries ([WHO, 2009](#)).

On average, road traffic collisions in Ghana cause 1800 deaths and 14,500 injuries annually, with pedestrian fatalities constituting 42% of all road collision fatalities and 68% of the total pedestrian fatalities in 2012 (NRSC, 2013). In a variety of contexts, it is true that pedestrians will invariably cross roads at one point and it is believed that the greatest risk posed to pedestrians is in the event of crossing a road, particularly where pedestrian infrastructure is poor ([World Bank, 2002](#)). Regrettably, urban areas in Ghana and many parts of Africa lack basic pedestrian infrastructure such as crossing facilities ([Amoako et al., 2014](#); [Mfinanga, 2014](#)). This situation coupled with the failure of pedestrians to comply with the use of limited facilities has compounded the challenge of addressing issues of pedestrian safety and comfort and facilitating pedestrian activities. Some international organisations (e.g. [World Bank, 2002, 2005](#)) have argued that neglectful political attitude towards pedestrian infrastructure provision and maintenance has contributed to declining safety records of pedestrians in urban Africa. Others (e.g. [Lasmini & Indriastuti, 2010](#); [Takamine, 2004](#); WHO, 2009) indicate that the poor pedestrian safety records coupled with insufficient attention given to the needs of vulnerable groups among pedestrians such as children, aged, disabled and pregnant women have increased pedestrian vulnerability in African countries.

In such situations, it is unsurprising that pedestrian collision statistics in African countries are alarming often raising questions about the availability, accessibility, adequacy, suitability and use of pedestrian infrastructure in urban areas (see [Damsere-Derry et al., 2010](#)). Official statistics in 2010 showed that worldwide 273,000 pedestrians were killed in road traffic fatalities, accounting for 22% of all road traffic fatalities (WHO, 2013). Not unexpectedly, Africa recorded the highest (38%) pedestrian fatalities in 2010, highlighting the gravity of pedestrian safety issues ([Amoako et al., 2014](#)). In Ghana, for example, the NRSC (2013) has frequently reported on a number of urban residents being killed or maimed as a result of road crossing limitations. It is in response to the knowledge gap in the literature regarding pedestrian–vehicular collisions due to limited and poor conditions of infrastructure in developing countries, and the unique situation in urban Ghana, where the safety of pedestrians is increasingly put at risk, that this study examines the safety implications of pedestrian crossing facilities and behaviour in urban Ghana. The purpose of this study is twofold: first, it appraises the state of pedestrian crossing facilities (i.e. crosswalks such as zebra crossing and signalised intersections) and behaviour in urban Ghana, using New Juaben District – one of the major hotspots of pedestrian collisions in Ghana – as a case study; second, it examines the safety implications of crosswalks on pedestrians. This analysis is organised into five sections. [Section 2](#) reviews relevant and related literature on road transport and pedestrian collisions and safety issues in developing countries. [Section 3](#) presents the case study setting and research methods used to carry out the research. [Section 4](#) discusses the results of the study. [Section 5](#) presents some concluding remarks on pedestrian infrastructure and safety in Ghana.

2. Pedestrian infrastructure and safety issues in developing countries: A focus on Africa

Pedestrian infrastructure (e.g. crosswalks), as a part of an urban area's transport network and economic growth strategy, has the potential to contribute significantly to the safety and well-being of pedestrians, socioeconomic aspirations of urban areas, urban regeneration and cohesion ([Kumar & Ross, 2006](#)). [Amoako et al. \(2014\)](#) argue that pedestrian infrastructure is imperative in improving walking environment in urban areas and incentivising and facilitating local economic development, and without adequate provision and maintenance of such infrastructure, pedestrian safety cannot be guaranteed. Thus, balancing and ensuring adequate provision and maintenance of pedestrian infrastructure in terms of availability, accessibility and suitability for the various pedestrian groups is a prerequisite for achieving urban functionality, harmony and cohesion. [Takamine, \(2004\)](#), however, notes that the focus of both colonial and contemporary road development projects in developing countries tend to centre on securing mobility for vehicles rather than pedestrians, giving pedestrian safety needs

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