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Research Article

Road safety environment around urban schools of Dharwad, India: a cross-sectional study

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ABSTRACT

Background: India accounts to 10% of global road deaths. In 2013 around 1,40,000 people were killed and 5,00,000 were severely injured or disabled. Road traffic injuries (RTIs) are a major health problem among young people. Children are vulnerable road users and safety issues near school zones are the major cause of concern. Improper road safety measures can seriously affect the safeness and security of school children. In this context the study was conducted to observe road safety features in close vicinity around all schools in Dharwad city Karnataka, India.
Methods: An observational study was carried out in Dharwad city focusing the safe environment around the 43 schools, which included both the government and the private schools. Data was collected from 1st April 2014 to 30th April 2014. All schools in the city were included for the study purpose.
Results: Total 43 schools were observed for road safety features, we found that the road safety features and the safe environment around the schools were inadequate putting children at risk.
Conclusions: We concluded that there is a need for immediate action and the responsible local authorities should take up this issue as top priority and implement the corrective road safety measures for the health of school children.

Keywords: Road traffic injuries, Road safety, School children, Environment

INTRODUCTION

The safety of children travelling to, from and around schools is an issue of concern to the whole community. Traffic conditions near schools can seriously affect the safety of school children. Children are mainly involved in road traffic injuries as passengers or pedestrians.[1]

According to World Health Organization (WHO) estimates, more than 2,60,000 children die and up to 10 million are injured in road crashes each year.[2] 90% of world's road traffic fatalities occur in developing countries. It is in this background that the UN general assembly has declared 2011 to 2020 as the "decade of action for road safety" which seeks to halt the increasing trends in road traffic deaths and injuries worldwide.[3]

Road safety of school children is a poorly addressed issue in India. Road traffic injuries are the second leading cause of death in the 15-19 and 5-14 years age group, respectively.[4] Road users in India are heterogeneous in nature, ranging from pedestrians, animal driven carts, bi-cycles, rickshaws, handcarts and tractor trolleys, to various categories of two/three wheelers, motor cars, buses, trucks, and multi-axle commercial vehicles etc.[5]

Factors responsible for involvement of children in road crashes include; defective road environment including excessive traffic volumes, inefficient, and unsafe public transport systems, inappropriate speed of vehicles, lack of separation of road users, and mixed land use where houses, schools, and commercial outlets are erected.[2,6,7]

Children are vulnerable to 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.[2,7]

Any intervention made to make roads safe for our children aims to bring about a greater sense of responsibility and safety towards all those who are concerned right from the parents, vulnerable road users to the policy makers and to the people who are responsible to carry out the laws that are made.

Therefore keeping the above said in mind ,an observational study was conducted to assess the availability of road safety features around schools of Dharwad city so as to provide existing information on various measures that are presently in place for the control of traffic near schools to make the roads safe for the safe movement of our children.

METHODS

The study was carried out in Dharwad city proper. A list of 136 schools (48 unaided, 23 aided and 65 government schools) was obtained from block education office of Dharwad city. Of the 136 schools, 43 schools were within the city limits and therefore for the sake of convenience 43schools were eventually observed for road safety features. Observation on road safety features were documented on a semi-structured observational checklist.

Observations made included:

1. Location of the school- on a major road or minor road;
2. Presence of road sign showing that a school was close by or that children are crossing;
3. Presence of a speed limit sign;
4. Presence of traffic calming devices (road bumps or zebra crossing);
5. Presence of a warden assisting children to cross the road;
6. Presence of school compound /gate
7. Designated parking space for vehicles coming into the school;
8. Presence of a pedestrian pavement/sidewalk; and
9. Presence of overgrown trees close to the school entrance which could obscure vision;
10. No stopping sign board in front of the school;

Permission to conduct the study was obtained from the ethical clearance Committee of the SDM Medical College and Hospital. Data were analyzed using SPSS version 16.

RESULTS

Road safety features were observed in close vicinity around the schools. Of the total 43 schools studied, 17 (39%) schools were located on major roads, while for the remaining 26 (60.46%) school entrances opened onto side-roads. Only 12 (27%) schools road environments had a road sign which indicated that a school was nearby, indicating that children were crossing.

Of the total schools observed, only 2 (4.6%) schools had most of the road safety features like zebra crossing, road bumps, stop sign and speed limit sign boards; one school (2.32%) had a warden who assisted children to cross. 26 (60%) schools had compound and the government has recommended schools should have compound wall/fencing and the entire premises be well lit with all-time supply of electricity.

8 (18.60%) schools had designated parking spaces for vehicles coming to the school. 3 (6.97) schools environments had pedestrian sidewalks and 13 (30.23%) schools had a number of overgrown trees close to the gate which affected visibility. Only 2 (4.6%) Schools had no stopping sign board in front of the school (Table 1).

Table 1: Availability of road safety features around school zones.

Safety features present	No. of schools (%)
Proper location of the school on a side road	26 (60.46%)
Presence of road sign showing that a school was close by or that children are crossing	12 (27%)
Presence of a speed limit sign	2 (4.6%)
Presence of traffic calming devices (road bumps or zebra crossing)	2 (4.6%)
Presence of a warden assisting children to cross the road	1 (2.32%)
Presence of school compound /gate	26 (60.46%)
Designated parking space for vehicles coming into the school	8 (18.60%)
Presence of a pedestrian pavement/sidewalk	3 (6.97%)
Presence of overgrown trees close to the school entrance which could obscure vision	13 (30.23%)
No stopping sign board in front of the school	2 (4.6%)

DISCUSSION

Of the total 43 schools studied, only 12 (27%) schools had a road sign indicating school was nearby, of which only 2 (4.6%) schools had road safety features (school sign board, zebra crossing, road bumps, stop sign, and speed limit sign boards). According to the document published by department of women and child development, government of Karnataka, India published on October 1st 2014, it is mandatory for all the schools to put speed breakers and appropriate traffic signs on either sides of the road.[8]

Government of Karnataka has made it mandatory for schools to appoint responsible person/security to oversee the movement of vehicles in front of the school, including those coming to drop/pick up children and to avoid accidents.[8]

3 (6.97) schools had pedestrian sidewalks and 13 (30.23%) schools visibility was blocked by overgrown trees close to the gate. Construction of sidewalks is required to establish the desired outcome of children walking or bicycling to school without risk for injury.

There are only a few studies that have focused on road safety features around schools in India. According to the studies conducted in other developing countries, have also revealed inadequate road safety features around schools.[9,10]

Study by O John et al on road safety features and awareness in selected schools of Vellore, India reported that none of the schools had speed breakers, traffic redistribution arrangements and pedestrian pavement. 66.67% had no school zone board or traffic signals at intersections near the school.

CONCLUSION

The study revealed that road safety conditions around schools of Dharwad city were grossly inadequate. Children are exposed to the risk of road crashes and subsequent injuries. They are physically and mentally immature to handle road traffic situations. Their limited sense of perception, not taking sufficient time to look while crossing the road, unpredictable behaviour, a tendency to be easily distracted, limited ability to respond quickly to a sudden change in traffic conditions makes them vulnerable.

The remedial measures would be to include road safety rules in school education. "Government needs to focus particularly in the younger generations to inculcate respect for traffic rules." A proper and practical road safety curriculum should be developed for this purpose as it will have a long lasting impact on the minds of our young children.

This basic descriptive information provides a starting point for understanding road features that promote or hinder safety of children as they commute to school, and this in itself is valuable for policy and prevention efforts.

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 stakeholders to ensure that basic road safety features are put in place and maintained around schools by the municipality to ensure safety of pupils on their way to and from school.

A copy of the study report was submitted to the respective authorities like the Traffic police, Road Transport Office (RTO) and the District Commissioner (DC).

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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