



A REVIEW ON ACCIDENT PREVENTION IN SCHOOL

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Abstrak

Pada masa kini, kemalangan yang menyebabkan kecederaan menjadi isu-isu penting dalam arena kesihatan awam. Kebanyakan ahli masyarakat beranggapan bahawa sekolah adalah tempat yang lebih selamat berbanding tempat lain kerana sentiasa berada di bawah pengawasan guru. Namun begitu, sekolah merupakan salah satu tempat berlakunya kebanyakan kemalangan yang boleh memudaratkan kanak-kanak sekolah. Kanak-kanak tidak berdepan dengan bahaya di kawasan sekolah sahaja, tetapi juga kawasan di luar sekolah. Oleh itu, kertas kerja ini memberi tumpuan kepada ulasan pencegahan kemalangan di luar sekolah terutama semasa perjalanan ke dan dari sekolah dan masa puncak. Kajian ini boleh membantu dalam mencari model terbaik pencegahan kemalangan di sekolah-sekolah terutamanya di Malaysia.

Kata Kunci: Pencegahan kemalangan, kawasan sekolah, kemalangan jalan raya, kanak-kanak, sekolah

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Abstract

At present, the issues of accidents that cause injuries become important in the public health arena. Most community members commonly perceive that the school is a safer place than other places because it is always under the supervision of teachers. However, the school is one of the common places where accidents that bring harm to the school children occur. Children are confronted with dangers not only within school grounds, but also outside of the school districts, especially during the journeys to and from the school as well as the peak time. Therefore, this paper aims to help finding the best measurements for accident prevention in the schools especially in Malaysia.

Keywords: *accident prevention, school area, traffic accident, children, school*

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1.0 Introduction

In recent years, accidents that cause injuries to people is one of the most important issues that being concerned in the public health arena. Accident can be defined as an unexpected event that ends in injuries or complex syndromes such as trauma, fracture, poisoning and burn that requires immediate assistance (Gambarte *et al*, 2014).

Schools become one of the largest categories of work place because many people including children, young people, teachers and other staffs most of their time in schools where physical, psychical and social hazards can occur which may cause negative effects to their health and behaviour (Vicario, 2012). According to Japan Sport Council's largest set of school injury data in Japan, there are approximately one million injuries occurring in elementary, junior high and high schools each year and this remains relatively stable year by year. School accidents causing injuries have not been as widely investigated as those occurring at home or in road traffic accidents (Scheps & Evans, 1987). This is due to the general belief that children are relatively protected in school because of the safe environment and supervision.

Despite the areas inside the school that was believe to be safe environment to the children, outside areas of the school can become one of the factors that can cause accidents to children. In urban areas including Malaysia, school areas congested with vehicles, for example school buses and cars especially during peak times such as the start and end of a school day (Na'asah *et al.*, 2013). One major issue in most of the studies concerned about traffic accidents that occur among the school children.

This paper focuses on the accident prevention outside the school areas especially during the travelling time from home to school and vice versa as well as during the peak hours.

2.0 Concept of Accident prevention

2.1 Accident causation

Traffic accidents of school children crossing the road were caused by several factors. Weiss *et al.* (2009) stated that the factors that lead to the traffic accidents especially when the children crossing the road including the awareness of the driver about the children presence when crossed the road and drivers failed to follow the rules especially the speed limits outside the school area. On the other hand, Suttayamully (2005) believed that these types of accidents occurred because of the vendors who blocked the sideways which forced the pedestrians to use the carriageway.





Hidayati *et al.* (2012) found out that the school which located around the main road is related to the presence of side friction which caused by pedestrians and private vehicles stopped or parked, as well as public transport stopping around the school. This condition will affect the traffic flow through the roads and also decrease the speed of the vehicle. For instance, there were quantities of unreasonable pedestrian crossing facilities in many cities due to their inconsistency with pedestrians crossing behaviour especially in the places of the primary school students gathered, the crossing facilities always were designed according to the adults' crossing behaviours, which expose the children to serious dangers (Pengfei *et al.* (2013).

Another study performed by Pengfei *et al.* (2013) focused on the behaviour of the pedestrian when crossing the unsignalized mid-block crosswalks around the primary schools in China. The paper selected four typical mid-block crosswalks with no signal control. The result showed that the adults did not let their children to follow the habits of their own. However, the crossing behaviours of the adults and adult-child pairs were different from that of the children alone. The high proportion of running crossing and not looking before crossing showed that the children were mentally immature and not concentrating, and they could not respond correctly to traffic conditions.

2.2 Travelling To And From School

Shokoohi *et al.* (2012) identified that several transportation modes had been used for children to go to school include walking either alone or with friends, walking with an adult or elder sibling, being sent by their parents and using the transport such as school bus. According to Ahlport (2008), students in most parts of the world tend to walk to and from school independently during the past few decades. However, as the time passed, parents tend not to allow their children to walk to school on their own due to the traffic, road conditions and the lack of supervision from adult.

McMillan (2005) and Pooley *et al.* (2005) mentioned that the distance between home and school, car ownership, the increase number of working mothers, urban form, and complex family schedules are the factors that contributing to the student transportation in urban areas. The safety of the travel to school is always linked to the quality of pedestrian and bicycle track facilities. According to Transportation Research Board (2002), a report on relative risks of school travel found that children that walk and cycle to school have the highest risk of injury and fatality on a per mile basis. Therefore, parents tend to ask their children to take the school bus or be driven to school instead of walking.

However, this kind of situations where parents driving their children to school could cause traffic





congestion especially during peak hours. Traffic congestion can also lead to environmental problems and traffic jams along streets near schools which would create hazardous conditions especially for those who are walking or cycling. Pooley *et al.* (2005) indicate that there will be more beneficial for both parents and children by encouraging the children to walk to school. This is because parents can avoid from traffic jams and can also save time and gas. Their children will also get benefits from walking to school by developing responsibility and independence (Pooley *et al.* (2005).

There was a study done by Shookohi (2012) about children walking to and from school in Tehran where parents and children were asked about the most suitable transportation mode from home to school for their children. From the result, majority of the parents agreed that walking was the most convenient transportation mode for their children only if they could escort them. Besides, only a few of them thought that walking with friends or alone to school was a proper school travel mode. On behalf of children, over 36% of the children answered that they like to walk with their friends to school, and the rate slightly increased on their return trip from school. However, approximately 43 % of parents reported that lack of personal safety in the neighbourhood is the main reason why they not allow their children to walk to and from school.

2.3 Accident Prevention Outside The School Area

National Center for Injury Prevention and Control (2010) stated that pedestrian injury is one of the important contributors of unintentional injuries among children and become the leading cause of mortality among children aged 1–19 years. Hence, National Center for Safe Routes to school (2006) had proposed a program named “Walking School Bus” (WSB) under parts of Safe Route to School program. A WSB is program where the children that are gather up throughout the neighbourhood walk to or from school in a group together with their parents or adults. It is interesting to note that WSB programs have the potential to improve safety behaviors among the children. This is because walking with an adult can decrease children’s pedestrian risk by almost 70% (Roberts, 1995). A number of studies have found that safety of childrens’ pedestrian is important in promoting the children’s active commuting, since it influences parents’ decisions (Dellinger and Staunton, 2002; Martin and Carlson, 2005).

Previous studies have reported that few parents actually teach their children about pedestrian safety while crossing the streets instead of just agree that their children should be taught about those skills (Morrongiello and Barton, 2009; Zeedyk and Kelly, 2003). The WSB become one of the oopotunity for the parents to teach their children about safety pedestrian model during their travel to and from school. Mendoza *et al.* (2012) listed three advantages related to safety of the WSB program in order to promote childldren’s active commuting to school. This program





provides practical and real lessons for safety education which occurs during the children's travel to school, the intervention focused on the children who walk to and from school and who have the higher risk to get injuries as well as the intervention does not disturb the children's study time since it takes place before and after school time.

Mendoza *et al.* (2009), however, stated that WBS program also have disadvantages. The main disadvantages of the program are implementation of the program which can be a problem to low-income families or low-resource schools, the availability of the program can be limited to only a proportion of children regularly participated in WSB programs and the increase of the potential for children to be too dependent on adults in order to cross the street safely. Elsewhere few studies argued that WSB program could be improved by using other promising pedestrian safety programs such as computer-based or virtual reality programs that have wide reach potential in order to improve pedestrian safety. (McComas *et al.*, 2002; Schwebel and McClure, 2010; Thomson *et al.*, 2005; Tolmie *et al.*, 2005).

In Indonesia, the Government has been implementing the School Safety Zone (ZoSS) facility which is built around the school areas (DGoLT, 2006) in order to control the speed of vehicles in the school area during a specific time.

Slinn *et al.* (2005) stated that traffic calming include speed bumps, curved and narrow traffic lane has two main purposes, which are to reduce the number of traffic accidents and to improve the condition of the neighborhood (Slinn *et al.*, 2005, Weiss *et al.*, 2009). According to DGoLT (2006), ZoSS is a time-dependent operation speed control zone. It is highly recommended to be used during peak hours of traffic flow which are 2 hours in the morning and 2 hours in the afternoon. However, the operation hours of the system can be adjusted according to the school need, such as at a full day primary school. The ZoSS consists of road markings including zebra crossing, dashed lines, the words 'school safety zone' and 'look right-left', as well as red block paving on the road surface. There were also traffic signs including warning sign and speed limit sign, as well as other optional supporting facilities for example traffic signals and rumble strips. ZoSS is provided to improve the safety of pedestrian while crossing the road by controlling and reducing traffic speeds, especially near kindergarten and primary school areas.

Based on the result by Hidayati *et al.* (2012) on the effects of roadside activities and the ZoSS facility on speed behavior in Indonesia, the findings indicate that the percentage of motorcycles' speed was more than 70% on all locations and it is proved that the implementation of the ZoSS was not reducing the speed of vehicles effectively. Most of the result in studied location showed the average for vehicle speed exceeded the speed limit excluding Gajah Mada Street and





Veteran Street in Surakarta which were below 25 km/h. On Sukowati-West Street, the average speed of cars was found to be over 30 km/h which was higher where the speed limit is only 20 km/h. However, the results were as expected in that the average speed of the cars was reduce around the beginning of school time.

Unfortunately, this facility cannot be effective due to several factor expecially when it comes to the traffic regulations such as speed limit, people tend to be less disciplined. Besides, the physical barrier before and after the zebra crossing are not thick, and the zebra crossing is only marked with a flat surface pavement. Therefore, public awareness is important to the people to follow the traffic rules which are in place to protect the road and environment for all users as well as redesigning the facility needs to be done to achieve the expected goals.

Na'asah *et al.* (2012) also suggested that pedestrian walkways and cycle tracks around the school areas should be upgraded. This is to provide more secure and comfort facilities for children's commuting and to equipped parents about the safety of their children walking or cycling to school. Safe Routes to School (SR2S) which is originally formed in Denmark, is a developmental policies and program which is the course of school and children's health. According to Transportation Alternative (2002), this is a positive effort to make routes to school safer for non-motorized modes through road safety education for both children and drivers, traffic law enforcement around schools and environmental engineering along the route to school in order to control the traffic flow and improve pedestrian and cycling facilities.

School children should be taught about the road safety in order to reduce the risk of accident among them. Study done by Mazeyanti *et al.* (2009) had develop a simulation game to facilitate acquisition of knowledge on road safety for schoolchildren in Malaysia. The simulation game is called Road Train Safety Game (RTSG). This game is developed due to the national road safety plan which introduced by Malaysia Government. According to Mazeyanti *et al.* (2009), this game is designed according to real environment and situation on the road. There are three different scenarios in this game including school, playground and home where the majority of the accidents happened.

In RTSG, the first scenario is when the student walk to school. Players need to attempt several tasks including crossing a busy road, takes the bridge, cross at the traffic light with the presence of cars, motorcycles and other transportation. Once the player complete the tasks appropriately, the score will be increased. However, if they failed to complete the tasks, the score will be deducted and will be given a tutorial on road safety in order to improve.

In Malaysia, current safety education is more to the classroom-based methods such as seminar, posters and also demonstration which the effectiveness of the method is being questioned





(Sharpley, 2003). Hence, by developing the RTSG, the alternative to provide a safety road education to the children age 7 to 12 years old. One of the features for this game is, it is fun and engage with the real environment which may help them to move forward and enhance their learning process on road safety.

Table 1: Authors and their Findings on Accident Prevention

No	Authors	Findings
1	Mendoza <i>et al</i> (2012)	Walking School Bus (WSB), a group of children walking to school had advantages and disadvantages.
2	Nurul Hidayati <i>et al</i> (2013)	Providing a School Safety Zone around the school area during peak hour in Indonesia.
3	Na'asah Nasrudin <i>et al</i> (2013)	Pedestrian walkways and cycle tracks around the school areas should be upgraded.
4	Mazeyanti M Ariffin <i>et al</i> (2009)	Developing a simulation game called Road Train Safety Game (RTS) in Malaysia to facilitate acquisition of knowledge on road safety for school children.

3.0 Conclusion

The review on previous studies showed that several accident preventions had been implemented in school in order to avoid the accidents from happened. The awareness level of accident prevention among people is high nowadays especially when it is related to school children. However, there is insufficient research on model of accident prevention in schools in Malaysia compared to other countries. In conclusion, more research need to be conducted on models of accident prevention in schools in Malaysia in order to reduce accident that occurrence in schools.





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