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Crossing guard presence: Impact on active transportation and injury prevention

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ABSTRACT

Evaluation of increased crossing guard presence on the likelihood children using safe active transportation (AT) was conducted during the simultaneous hiring of multiple crossing guards. The primary study aim was to determine if increased crossing guard presence was associated with (1) an increased number of children walking/biking to school, (2) diminished parental safety concerns, (3) an increased likelihood of parents allowing their child to walk/bike to school, and (4) an increased number of children utilizing supervised routes.

A quasi-experimental study design was conducted at study intersections in experimental and control schools (matched by neighborhood, rate for risk of pedestrian injury, and socio-economic status). Only experimental schools received awareness campaigns and a newly positioned crossing guard. Measurements taken pre/post-guard placement assessed trends of AT rates among the school's population, and Parent Surveys were utilized to determine if crossing guard presence changed parental attitudes toward AT and/or perceptions of safety.

Pre/post-program implementation evaluation did not reveal significant changes in trends of AT; parental safety concerns; parental attitudes towards AT. Though experimental schools showed fluctuations in travel trends, no indication of either improvement or worsening of attitudes was found. Significant (noticeable) differences in pre/post-program implementation were identified in the fourth study aim, the number of children utilizing supervised routes vs. unsupervised routes. Also the control school showed no discernible changes from pre to post-program implementation.

Study findings demonstrate that increased crossing guard presence is most likely to influence safe behavior as indicated by the increased numbers of children engaging in predictable pedestrian behaviors through their use of supervised routes. Results suggest a prioritization towards engaging in and acknowledging safety before physical activity in areas with existing high rates of AT to and from school. Future studies will include longer observation periods, longer interventions, and lower rates of existing AT.

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1. Introduction

The relationship between health and safety has received a great deal of attention; particularly that of active transportation (AT; e.g. walking or bicycling) and prevention of injuries to people walking or bicycling. Most recently public health professionals acknowledged that transportation is a point of intervention that is generalizable to the entire community, and can easily address issues of wellbeing (APHA, SRTS 2012). In support of this concept, there is a growing body of evidence linking the built environment to the health of its residents (Carlson et al., 2012; Jackson et al., 2013; Renalds et al., 2010; Rodriguez, 2009). However, along with the physical infrastructural improvements which promote more walking or biking, there is a critical need for programs (public health and transportation alike) to not only design effective ways to keep communities healthy, but injury free. As indicated in a recent report by the Centers for Disease Control and Prevention (CDC), motor vehicle crash incidents continue to be the number one cause of unintentional injury/death in children with

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nearly one in five traffic deaths occurring among children ages 14 and under (CDC, NCIPC 2012). Statistics such as these justifiably discourage parents from allowing their children to walk or bike to school, and consequently result in the reduction of opportunities for children to engage in daily physical activity.

It is necessary, then, to identify a common theme between AT and injury prevention which will facilitate desirable outcomes in both. Recent studies focusing on this relationship have indicated the value of interventions which promote both injury prevention and physical activity through AT (Carver et al., 2008; Dimaggio, Li, 2013; Gropp et al., 2012; Litman, 2013; McDonald et al., 2013; Rothman et al., 2013). In the following study we aimed to determine the relationship between the presence of a crossing guard (a person trained and sometimes certified to help pedestrians, particularly schoolchildren, cross intersections safely), and children's rate of AT. Crossing guards are primarily associated with injury prevention discouraging negative behaviors in motorists' such as speeding, while promoting predictable, safe street crossing behaviors of children (Renalds et al., 2010). Exploring the potential role of crossing guards to address injury prevention and health promotion may offer valuable information towards an effective and efficient intervention to address both simultaneously.

The specific aims of the following study were to determine whether the increased number of crossing guards at targeted schools, would result in (1) an increased number of children walking/biking to school, (2) diminished parental safety concerns, (3) an increased likelihood of parents allowing their child to walk/bike to school, and (4) an increased number of children utilizing supervised routes. The study was conducted in Miami-Dade County, Florida which is considered one of the four most "dangerous metro areas for walking" in the United States (Ernst et al., 2011). Though specific causes for the high pedestrians-hit-by-car (PHBC) rates are unclear, transportation experts consider factors such as early infrastructural city planning tending towards auto-centrism due to urban sprawl (Ewing et al., 2003; Ewing and Dumbaugh, 2009), and the local climate (extended daylight and warmth encouraging outdoor activities) as potential culprits (Kourtellis et al., 2012). Moreover, Miami-Dade County's cultural and geographic diversity lends itself to social and environmental factors found to be closely associated with high PHBC injury rates (Cottrill and Thakuria, 2010; Laflamme and Diderichsen, 2000; Loukaitou-Sideris et al., 2007; Morency et al. 2012; Zegeer and Bushell, 2012). The most palpable characteristic in Miami-Dade County is the persistent motor vehicle culture amongst the community, which despite current transportation perspectives to emphasize awareness of multi-modal transportation as well as pedestrian and bicycle safety, easily sustains the high rates of vulnerable road-user injury due to car crashes.

Within the City of Miami, where the current study was conducted, some of the highest PHBC rates have been documented (FDOH, 2012). The demographic and environmental characteristic of the City of Miami reflect a small geographic area that is densely populated with majority low to moderate income neighborhoods characterized by the predominance of the language spoken (Haitian-Creole, Spanish, or English; U.S. Census Bureau, 2010). Safe Routes to School (SRTS) Student Tallies reveal that within the City of Miami a high percentage of school aged children walk and bike to school predominantly not supervised by an adult (parent or guardian). Compounding the potential risk of pediatric injury due to high numbers of unsupervised children walking, is the number of crossing guards which on average is less than one per school within the City of Miami as compared to the rest of the county which is over four per school. (provided by Miami Dade County Police Department and the City of Miami Police Department). Furthermore, SRTS Parent Surveys obtained from parents of public school children throughout the City of Miami (these Parents Surveys were provided in Haitian-Creole, Spanish, and English to accommodate the community) revealed that parents are fearful and reluctant to allow their children to walk or bike to and from school because of concerns of the amount of traffic, the speed of traffic, crime, and insufficient crossing guard presence.

The opportunity to research the effectiveness of crossing guard presence on health and safety within a heavily public health burdened (high rates of injury, insufficient pedestrian/bicycle safety enforcement, high rates of unsupervised pedestrian ATs) area such as the City of Miami became possible through a CDC Communities Putting Prevention to Work grant obtained by the City of Miami Police Department (approximately \$200,000). The grant secured one year of funding to hire, train, and equip 24 new crossing guards to be placed at multiple Miami-Dade Public elementary schools in the City of Miami during the 2011–12 school year. Research on the impact of newly and simultaneously placed crossing guards at various schools could help to determine if utilizing a simple, relatively low cost modification/intervention (average wage for Florida crossing guards is \$9.00 per hour) could influence two public health concerns, injury prevention and health promotion. Within a framework defined by Social Cognitive Theory (Bandura, 1998), the proposed intervention, the crossing guards, might positively influence the currently unsupervised children participating in active transportation to and from school to incorporate safe pedestrian behaviors role-modeled by the crossing guard. Furthermore, as way to increase the numbers of children walking to and from school, parental awareness of newly placed crossing guards might influence and increase a parent's sense of safety and level of confidence towards allowing their children to participate in active transportation. Children not participating in active transportation might also be influenced to walk more by their peers whom after placement of new crossing guards are walking in a safer environment.

Currently there is limited research on the benefits of utilizing crossing guards within the described theoretical framework, or any other. Therefore, findings from this study revealing the potential correlation between increased crossing guard presence and increased rates of AT may guide public health policy and practice debates regarding ways to successfully decrease the rates of pediatric pedestrian injury while supporting an increase in AT. Moreover, identification of simple interventions which can sustain existing high rates of AT while further increasing the numbers of safe walkers and cyclists, may provide insight towards "more eyes on the streets" strategies to deter crime and traffic related injury (Jacobsen, 2003; Leden, 2002; Robinson, 2005) issues which are relevant to the current study site, and which may be generalizable to other areas.

2. Methods

2.1. Study schools/intersections

Intervention schools were selected from a City of Miami Police Department prioritization list developed to systematically place a total of twenty-four grant funded crossing guards at fourteen Miami Dade County City of Miami elementary schools with the greatest urgency for crossing guard presence. Prioritization was based on documented high rates for pediatric pedestrian injury, presence of main traffic arteries, school population, local traffic volume, as well as the existence of a large number of unsupervised children walking to and from school.

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