

Potential Distractions and Unsafe Driving Behaviors Among Drivers of 1- to 12-Year-Old Children

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The authors declare that they have no conflict of interest.

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ABSTRACT

OBJECTIVE: Driver distraction has been identified as a threat to individual drivers and public health. Motor vehicle collisions remain a leading cause of death for children, yet little is known about distractions among drivers of children. This study sought to characterize potential distractions among drivers of children.

METHODS: A 2-site, cross-sectional, computerized survey of child passenger safety practices was conducted among adult drivers of 1- to 12-year-old children who presented for emergency care between October 2011 to May 2012. Drivers indicated the frequency with which they engaged in 10 potential distractions in the past month while driving with their child. Distractions were grouped in 4 categories: 1) nondriving, 2) cellular phone, 3) child, and 4) directions. Information about other unsafe driving behaviors and sociodemographic characteristics was collected.

RESULTS: Nearly 90% of eligible parents participated. Analysis included 570 drivers (92.2%). Non-driving-related and cellular phone-related distractions were disclosed by >75%

of participants. Fewer participants disclosed child (71.2%) and directions-related distractions (51.9%). Child age was associated with each distraction category. Cellular phone-related distractions were associated with the child riding daily in the family car, non-Hispanic white, and higher education. Parents admitting to drowsy driving and being pulled over for speeding had over 2 times higher odds of disclosing distractions from each category.

CONCLUSIONS: Distracted driving activities are common among drivers of child passengers and are associated with other unsafe driving behaviors. Child passenger safety may be improved by preventing crash events through the reduction or elimination of distractions among drivers of child passengers.

KEYWORDS: accident prevention; child passenger safety; driving distractions; survey

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WHAT'S NEW

Parents disclosed using cellular phones while their 1- to 12-year-old child was a passenger at levels consistent with the US adult population, and more than two-thirds disclosed child-related distractions. Driving distractions among parents represent an opportunity for childhood injury prevention.

DRIVER INATTENTION CONTRIBUTES to motor vehicle crashes (MVCs) and near-crash events.¹ Driver distraction, one form of driver inattention,² has been identified as a threat to both the individual driver and to public health.^{3–5} Driver distractions can range in manual and visual complexity from simple (eg, adjusting the radio) to complex (eg, dialing a handheld device).¹ Prior national surveys of adult drivers have found that cellular phone-related distractions are prevalent: about two-thirds of adult drivers talk on cellular phones, and about one-third of drivers text while driving.^{6–8}

Using a cellular phone can result in significant impairment and greatly increase crash risk.⁹ Approximately 1 in 6 fatal MVCs in the United States in 2008 resulted from driver distraction, and over time, increased percentages of fatal crashes have been attributed to cellular phone use specifically.³ In addition to the growing concerns over distracted driving, excessive speed and alcohol have persisted as key factors in fatal crashes,¹⁰ and drowsy driving has gained attention as a cause of many MVCs.^{11,12} In combination, driver distraction and impairment from substances or drowsiness interact to reduce driving precision and increase driving errors.^{13,14}

MVCs remain a leading cause of death for US children,¹⁵ yet little is known about behaviors that increase crash risk among drivers of children. To date, much distracted driving research has focused on cellular phone use among teens and young adults.^{16–18} Few studies have concentrated on distractions or impairment among drivers of child passengers.^{19–22} In this study, we sought to characterize potential distractions among drivers of children 1 to 12 years of age and to explore the

relationships between potential driver distractions and other unsafe driving behaviors, including suboptimal child restraint use and child seat location. These analyses were conducted in order to inform future research efforts to improve child passenger safety and to generate hypotheses about the role of child passengers in driver distraction.

METHODS

STUDY

DESIGN

A 2-site, cross-sectional, computerized survey of child passenger safety practices among parents and caregivers seeking emergency care for their 1- to 12-year-old child was conducted at the University of Michigan (UM) C. S. Mott Children's Hospital emergency department (ED) in Ann Arbor, Michigan, and the Hurley Medical Center (HMC) ED in Flint, Michigan, between October 2011 and May 2012. The institutional review boards of the UM medical school and HMC approved the study.

SETTING

The UM pediatric ED is a suburban tertiary-care academic hospital with a predominantly white and privately insured patient population. The HMC ED is an urban community hospital. The patient population treated in the HMC ED consists of higher proportions of African American children and children covered by Medicaid compared with UM. Text messaging has been banned for all drivers in Michigan since 2010, but there are no statewide restrictions on cellular phone use for adult drivers.²³

SUBJECTS

Parents and caregivers arriving to the ED with their 1- to 12-year-old child were potentially eligible for the study. Parents were not approached if their child was critically ill or injured, was under evaluation for suspected child abuse, or was going to be admitted to the hospital. Parents were excluded if they were <18 years, if they did not speak English, or if their child required a special passenger restraint (eg, a travel vest or wheelchair). Using a measuring tape, the research staff determined the height of children of parents who were potentially interested in the study. Parents were excluded if their child was 4 feet, 9 inches tall or taller (the height at which an adult seat belt is expected to fit properly).

SURVEY INSTRUMENT

The study team developed survey questions to assess child passenger safety practices on the basis of published literature^{1,20,24} and pilot tested the instrument with 21 parents. Modifications were made to clarify confusing questions identified in pilot testing. Survey items (Appendix) related to the results presented in this study had a Flesch-Kincaid grade level of 5.5, calculated using the built-in software in Microsoft Word 2010 (Microsoft Corp, Redmond, Wash).

SURVEY ADMINISTRATION

Data collection occurred during high-volume hours (2–9 PM) to maximize recruitment. Recruitment days were varied to ensure enrollment on weekdays and weekends. Research assistants, using a standard script, approached parents after the child was in their treatment room. Written informed consent was obtained after the research assistant reviewed study procedures. Responses were entered by parents directly on a study tablet computer using Qualtrics (Qualtrics Labs Inc, Provo, Utah). Parents were offered a \$20 incentive for survey completion and were provided with contact information for local child passenger safety programs.

MEASURES

Potential driver distractions were the main variables of interest. Drivers were asked how often in the past month (ranging 1 = never to 4 = almost every trip) they performed 10 potentially distracting activities while driving their child and the vehicle was moving (Appendix). The specific activities were drawn from the published literature.^{1,20} Potential distractions were categorized as: 1) non-driving-related: eat/drink/smoke, groom (eg, brush hair, shave), change a DVD/CD/tape; 2) cellular phone-related: talk on handheld cellular phone, talk on phone using a hands-free device, text/e-mail/browse the Internet; 3) child-related: give food to child, pick up a toy or game the child dropped; 4) directions-related: read map or printed directions, use an electronic navigation system.

Unsafe driving behaviors were assessed with fixed response questions. Participants were asked about their own seat belt use, driving in the past year while too sleepy to stay fully awake (drowsy driving), driving in the past year while feeling effects from alcohol, drugs, or medications (impaired driving), ever being pulled over for speeding, and ever having their driver's license suspended. The time frames of 1 year and ever were selected in order to capture events that were expected to be rare. A 1-year time frame has been used in other studies of alcohol-impaired driving.²⁵ These unsafe driving behavior questions did not inquire about the presence of the child in the vehicle. Participants also reported if their child ever rides in the front seat and the types of passenger restraint used for their child. Sitting in the front seat was considered in terms of never versus ever for analysis. Age-appropriate restraint use was defined as 1- to 3-year-old children using car seats, 4- to 7-year-old children using car seats or booster seats, and 8- to 12-year-old children using booster seats or seat belts, according to the Michigan child passenger safety law.²⁶ Because some parents selected more than one restraint type, age-appropriate restraint use was considered in terms of children who never used the age-appropriate restraint and those who did not always use the age-appropriate restraint based on the least protective restraint (or ever were unrestrained). For example, a 3-year-old reported to use a car seat and a booster seat was considered to use the booster seat for analyses. The least protective restraint selected was chosen for analysis because this

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