

Identifying Number MPC-347

Project Title:

Misinformation Contributing to Safety Issues in Vehicle Restraints for Children

University:

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Description of Research Problem:

Lack of restraint use or misuse of restraints for children, especially those under the age of 13, is a real concern. Despite laws requiring the use of child safety seats in all 50 states, many children still do not travel safely in cars (IIHS 2010). Between 2000 and 2005 (2005 is the most recent year for leading causes of death), motor vehicle crashes were the number one cause of death of children between the age of 1 and 12 (CDC WISQARS). Between 2000 and 2005 47 deaths among North Dakota's children aged 1 to 12 were cause by unintentional injury (CDC WISQARS). Motor vehicle deaths accounted for 40 percent of those unintentional injury deaths. Of the 80 children under the age of 12 killed in motor vehicle crashes between 2003 and 2007 (2007 is the most recent year available for motor vehicle fatalities), 6 or approximately 8 percent were improperly restrained in the vehicle (FARS). It is possible that some of these deaths would have been prevented by having the children properly restrained within the vehicle.

In the United States in 2007, more than one-quarter (28%) of children younger than age 1 were not in rear-facing seats although the recommendation is that infants be kept rear-facing until a minimum of age one and at least 20 pounds (Glassbrenner, 2008). Also, 44 percent of

children who are 20-40 pounds were not in the recommended front-facing safety seats, with 8 percent totally unrestrained (Glassbrenner, 2008). In addition, more than half of children aged 12 or younger who are 37 to 53 inches tall were not in safety seats or boosters, and 16 percent were totally unrestrained. More than 85 percent of children aged 12 or younger who are 54 to 56 inches tall were not in safety seats or boosters, and 15 percent were totally unrestrained (Glassbrenner, 2008).

The ND Department of Health, Injury Prevention Program conducts biannual child restraint observation surveys throughout the state of North Dakota. According to a recent report released by the Injury Prevention Program (2007), in 2006, at least 18 percent of children aged 12 or younger were improperly restrained or were totally unrestrained in the vehicle in which they were riding, while more than 19 percent were improperly seated in the front of the vehicle. During the survey, the ND Department of Health did not track restraint misuse. However, surveyors were encouraged to provide additional comments regarding their findings. The following are some of the most common issues they found:

1. Shoulder belt placed behind the child's back.
2. Shoulder belt under the arm.
3. Child too small for booster seat.
4. Loose seat belts.
5. Booster seat being used with a lap-only seat belt.
6. Children younger than one year of age riding in integrated child restraints.
7. Misused car seats.

Lack of or improper parental education regarding proper child restraint within vehicles could be resulting in increased misuse of child restraints and lack of restraint use. Recent studies have shown that lack of parental knowledge of proper child restraints and misinformation were two of the main reasons that children were not properly restrained in vehicles (Simpson et al., 2002; Rivara et al., 2001; Ramsey et al., 2000). This lack of information and dissemination of misinformation could be the result of a general lack of child passenger protection knowledge among groups who should be well-informed (i.e. pediatricians, family practitioners). Parents are not only getting little to no information and incorrect information, they are

also getting unclear and inconsistent messages from multiple sources, such as sales associates, friends, family, manufacturer labels, even health care providers (Rivara et al., 2001; Will, 2002). Recent research found that incorrect information given at health care facilities may actually contribute to child safety seat misuse (Will, 2002). One study found that child seat misuse was the result of parents relying on information they received at well-child visits when their child was an infant, and haven't been updated with information relevant for their older child (Ramsey et al., 2000).

If used properly, child safety seats can reduce the risk of death by up to 54 percent for children aged 1 to 4 and by as much as 71 percent for infants (NHTSA, 2001). Risk of hospitalization can be reduced by up to 67 percent when safety seats are used correctly (Winston and Durbin, 1999). Fatality risks for children aged 12 or younger properly restrained in the rear seat of a vehicle are 38 percent lower than for children restrained in the front seat (Braver et al, 1998). These are very strong arguments for ensuring that all children are properly placed and restrained within vehicles by providing accurate information to their caregivers through a reliable source.

Health care providers are ideally placed in society to be on the front-lines of prevention education regarding this issue (Rivara et al., 2001). Parents themselves report a desire for health care provider recommendations (Eichelberger et al., 1990; Price et al., 1995; Schuster et al., 2000). Cheng et al (1996) found that 83 percent of mothers felt that doctors could help in the reduction of injuries resulting from a "car accident." In addition, approximately half of parents say they already receive information on child vehicle restraint from a health care provider (NHTSA, 2009). However, studies indicate physician knowledge of car seat safety is relatively low (McKay and Curtis, 2002; McKay, 2008; Will, 2002; Rothenstein et al, 2004; Cohen and Runyan, 1999). Cohen and Runyan (1999) found that only 58 percent of pediatric residents knew that a convertible car seat could be turned forward when a child is 20 pounds (which was correct at the time of the study), and only 42 percent knew that the safest place for an infant car seat is in the back middle. In a 2001 American Academy of Pediatrics (AAP) surveys regarding anticipatory counseling practices of pediatricians, only 45 percent of physicians were confident that they could address a parent's question regarding properly installing a car seat or booster seat appropriate for the age and weight of a child (AAP, 2001). Only 58 percent stated they

were confident that they would be able to answer a parent's question regarding referrals to reliable resources for further information on choosing and installing car seats.

Several studies show that physicians infrequently counsel their patients regarding child passenger safety issues (Williams et al, 2001; Rothenstein et al, 2004; AAP, 2001; Cheng et al, 1999). Barkin et al (1999) found that two-thirds of health care providers say they counsel parents of pediatric patients on injury prevention as it relates to motor vehicle crashes. In the 2001 AAP study, nearly 90 percent of pediatricians reported discussing passenger restraint systems with at least 75 percent of parents of children younger than 12 months old at least once and 76 percent reported discussing this topic with most parents of toddlers (AAP, 2001). However, the proportion of parents counseled on child passenger safety decreases as the child's age increases. And relatively few providers acknowledged providing information on this topic at every well-child visit. Barrios et al (2001) found that parents of children under 7 months of age were asked about car seat use by physicians approximately 82 percent of the time, but the interactions regarding car seat use were superficial, and did not go beyond simply asking if the parents used a car seat.

There have been mixed results as to the effectiveness of office-based anticipatory guidance regarding injury prevention. Anticipatory guidance and other interventions in the clinic setting were found to increase the adoption of motor vehicle restraint use in some studies (DiGiuseppi and Roberts, 2000; Bass et al., 1993; Kelly et al, 1987; Scherz, 1976; Resinger et al., 1981; Kanthor, 1976; Bass and Wilson, 1964), while anticipatory guidance has been shown to have no effect in other studies (Leverence et al., 2005; Gielen et al., 2001). However, even with the inconsistent research results on anticipatory guidance regarding injury prevention counseling, the American Academy of Pediatrics (AAP) recommends that all children receive injury prevention counseling for 'the most significant childhood injuries' and that it should be integrated into every well-child visit (Bass et al., 1993). Through The Injury Prevention Program (TIPP), the AAP sets out a well-defined set of guidelines and materials to help physicians implement injury prevention counseling (Bass et al). TIPP "provides physicians with a systematic, epidemiologically sound, developmentally appropriate, and effective way to conduct injury prevention counseling"

(Bass and Micik, 1997). TIPP includes a safety-counseling schedule, age-appropriate safety surveys, and age-appropriate safety sheets for families to take home (Gardner et al., 2007). Counseling topics regarding traffic safety are clearly delineated by age grouping (infants, preschool-aged children, school-aged children, and adolescents), with explicit talking points provided for the physician (Gardner et al., 2007). In addition, the AAP released a policy statement in 2002 that discusses the Academy's current recommendations on selecting and using the most appropriate vehicle restraints for growing children, and outline guidelines for counseling parents (AAP, 2002). Injury prevention counseling is also included in the US Preventative Services Task Force Guide to Clinical Preventive Services (AHRQ, 2008). A cost-benefit analysis of injury prevention counseling was conducted by Miller and Galbraith (1995) who found that if pediatricians were to regularly counsel their patients on the importance of proper child vehicle restraints, this could result in as much as a \$72.50 in medical cost savings per child.

Of the research that has been conducted on anticipatory counseling regarding child vehicle occupant safety issues by health care providers, there has been no focus on the practice patterns of providers located in rural areas versus providers that practice in urban areas. Child restraint use in rural and urban areas is fairly comparable (86 percent in rural areas and 85 percent in urban areas, United States - 2007) (Ye and Pickrell, 2008). However, in regards to overall traffic safety, children aged 14 or younger who are involved in motor vehicle crashes in rural areas are two to five times more likely to be seriously or fatally injured than children who are involved in crashes in urban areas (Kmet and Macarthur, 2006; Hwang et al., 1997; King et al., 1994; Lapidus et al., 1998; Niemcryk et al., 1997; Svenson et al., 1996a,b). Agran et al (1998) found that the percent of children aged nine or younger involved in fatal motor vehicle occupant crashes using occupant restraints was much lower in rural areas than in urban areas (54% rural versus 61% urban). It should be noted, there are no studies comparing rural and urban misuse of child safety seats or improper restraint within vehicles. While child restraint use is comparable, the difference in serious and fatal injuries in rural and urban areas could be the result of the lack of child restraint counseling or the dissemination of misinformation regarding child restraints by physicians in rural areas.

Determining current knowledge-levels of health care providers regarding child passenger safety issues and frequency of counseling on this topic would highlight problem areas in relation to misinformation being disseminated to parents/caregivers or lack of information being disseminated to parents/caregivers.

Research Objectives:

The goal of this project is to determine 1) the extent to which health care providers in select states (specifically pediatricians and family practitioners) are providing any anticipatory guidance regarding child safety seats and proper child occupant restraint within a vehicle , 2) whether health care providers are providing accurate anticipatory guidance regarding child safety seats and proper child occupant restraint within a vehicle, 3) barriers to discussing child passenger safety during well-child checkups, 4) if there are differences in anticipatory counseling practices regarding child vehicle occupant safety between rural and urban providers, 5) if there is a difference in the knowledge of child vehicle occupant safety between parents whose provider discussed this topic with them, versus parents whose provider did not discuss the topic, and 6) if there is a difference in the knowledge of child vehicle safety between parents whose providers are located in a rural area versus those located in an urban area.

How will this be accomplished?

1. By evaluating well-child visits to health care providers (specifically pediatricians and family practitioners) within select upper Midwest states, from the parent's perspective and from the health care provider's perspective.
2. By evaluating the knowledge-base of health care providers within select states regarding their state's child occupant protection laws and recommendations.

Research Approach/Methods:

Surveys will be used to gather information on child passenger safety education practices of physicians, and child passenger safety knowledge levels of parents. UGPTI will invite health care facilities from the following

states to participate in the study: North Dakota, Utah, South Dakota, Colorado, and Wyoming.

Pediatricians and family practitioners from participating facilities will be surveyed. A random sample of households with children aged 12 or younger will be surveyed in the selected states.

The health care provider survey will attempt to obtain information such as:

1. What is the knowledge level of practicing health care providers regarding proper child vehicle occupant safety?
2. What are their habits in regard to anticipatory guidance for child passenger safety?
3. What are barriers that exist that prevent them from discussing child passenger safety?
4. Have they ever participated in a child safety seat training class?

The parent survey will attempt to obtain information such as:

1. Was child vehicle occupant safety discussed by their health care provider at their most recent well-child visit? At ANY well-child visit they can remember?
2. What is the knowledge level of parents regarding proper child vehicle safety?
3. How does the knowledge level differ between parents whose provider did discuss child vehicle occupant safety versus parents whose provider did not discuss this topic?
4. How does the knowledge level differ between parents whose provider is located in a rural area versus parents whose provider is located in an urban area?

Tasks:

1. Background/prep work.
2. Obtain parent and health care provider contact information.
3. Survey design and distribution.
4. Analyze data.
5. Create summary reports for various audiences.

MPC Critical Issue(s) Addressed by the Research:

1. Human factors

Contributions/Potential Applications of Research:

Limited information exists regarding health care provider knowledge about child passenger safety and provider counseling regarding this topic. To this researcher's knowledge, there have been no studies done and no information gathered regarding these topics specific to providers located in the selected states. This information will add to the body of knowledge regarding child passenger safety education, increase the understanding of the frequency of child passenger safety counseling at well-child visits, increase the understanding of barriers to providing anticipatory guidance to parents at well-child visits, provide an understanding of the impact of child passenger safety counseling provided at well-child visits, and determine if geographical differences exist between providers in anticipatory guidance practices at well-child visits.

Potential Technology Transfer Benefits:

A research report providing a summary of findings which can be used by traffic safety organizations, such as the state health departments, state transportation departments, and Safe Communities Coalitions, and other injury prevention groups, to help develop and expand current child occupant protection courses to target health care providers within the selected states. The research will also be presented to local audiences and submitted for research conference presentation and journal publication.

Time Duration:

July 1, 2010 - June 30, 2011

Total Project Cost:

\$43,050

MPC Funds Requested:

\$30,000

Source of Matching Funds:

\$13,050 University Contribution

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