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Rural–urban differences in health care provider child passenger safety anticipatory guidance provision

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ABSTRACT

Many children do not travel safely in vehicles, with rural children often traveling less safely than urban children. Motor vehicle crashes were the leading cause of death of children aged from 1 to 14 years in the United States in 2011. Lack of education or inadequate parental education during well-child visits regarding proper child restraint within vehicles by health care providers (HCPs) in rural areas could be resulting in increased misuse of child restraints and lack of restraint use in rural areas. This study sought to determine rural–urban differences in frequency and accuracy of anticipatory guidance related to child passenger safety (CPS) provided by HCPs, in addition to rural–urban differences in HCP confidence in providing this counseling. HCPs from rural and urban areas in several upper Midwest states were surveyed about frequency and confidence of advice provided to parents related to CPS and their knowledge level on this subject. Urban HCPs were significantly more likely than rural HCPs to consistently provide advice to parents related to CPS across all age groups for children aged 12 years or younger. Differences were found between rural and urban HCPs regarding confidence in their ability to address parents' questions/concerns, and knowledge related to specific CPS issues. Significant differences exist in the frequency of CPS anticipatory guidance provision and confidence in accurate provision of CPS anticipatory guidance by rural and urban HCPs to parents. Significant differences also exist between rural and urban HCPs in relation to CPS knowledge. Differences may be due to increased levels of training for urban HCPs. This research is important as it adds to the compendium of knowledge related to CPS counseling patterns focused on reducing motor vehicle-related injuries and fatalities in children.

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1. Introduction

Many children do not travel safely in vehicles despite laws requiring children to travel in safety seats currently in place in all 50 states (Insurance Institute for Highway Safety, 2012). Motor vehicle crashes were the leading cause of death of children between the age of 1 and 14 in the United States in 2011 (Hoyert and Xu, 2012), with a large number resulting from lack of restraint use or misuse of child restraints, including but not limited to, incorrect restraint for child age/weight and improper child safety seat installation within a vehicle (Decina and Lococo, 2005). A reason for misuse of child restraints or lack of restraint use could be nonexistent or inadequate provision of parent education regarding correct child restraint within vehicles. This knowledge deficiency and/or reception of incorrect information, such as not knowing the most appropriate situation of a child within a vehicle, might stem from a lack of child passenger safety (CPS) awareness in particular groups who frequently provide information to parents (Will, 2002), such as health care providers (HCPs), including physicians, physician assistants, and nurse practitioners. Previous studies have shown parents often rely on CPS information received at infant well-child visits, but were not provided with information applicable as their child aged (Ramsey et al., 2000). Research has revealed two principle reasons children are not correctly restrained in vehicles are a deficiency in parent knowledge related to correct child restraints (Bilston et al., 2008; Cameron et al., 2006; Ebel et al., 2003a, 2003b; Koppel et al., 2008; Simpson et al., 2002) and dissemination of incorrect information (Ebel et al., 2003b; Katz et al., 2001; McKay and Curtis, 2002; Rivara et al., 2001; Simpson et al., 2002; Will, 2002).

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Injury prevention-related education is effective at increasing injury prevention activities, including motor vehicle restraint use (Bass et al., 1993; DiGuseppi and Roberts, 2000; Nansel et al., 2008; Nelson et al., 2003). The role and placement of HCPs within society is ideal to provide age appropriate prevention education, also known as anticipatory guidance (Magar et al., 2006), concerning CPS (Rivara et al., 2001), and parents have conveyed an inclination for HCP recommendations (Schonwald et al., 2009; Combs-Orme et al., 2011; Dumont-Mathieu et al., 2006). The American Academy of Pediatrics (AAP) recommends that CPS anticipatory guidance be included at every well-child visit (Durbin, 2011). However, studies indicate HCP knowledge of car seat safety is low (AAP, 2001; Cohen and Runyan, 1999; McKay, 2008; McKay and Curtis, 2002; Rothenstein et al., 2004; Yingling et al., 2011; Zonfrillo et al., 2014). Additionally, several studies have shown HCPs inconsistently counsel their patients regarding CPS issues, and as children age, the frequency of anticipatory guidance provided by HCPs declines (AAP, 2001; Barkin et al., 1999; Barrios et al., 2001; Macy et al., 2012; Rothenstein et al., 2004; Williams et al., 2001; Zonfrillo et al., 2014).

Research has shown rural–urban differences in child restraint use (Niemcryk et al., 1996; Agran et al., 1998; Rakauskas et al., 2009), in-vehicle placement of children (Huseeth-Zosel, 2012), and child motor vehicle injuries and fatalities (Hwang et al., 1997; Kmet and Macarthur, 2006; Lapidus et al., 1998). Children are at an increased risk to be involved in motor vehicle crashes resulting in injuries and fatalities in rural areas as compared to urban areas (Aitken et al., 2013; Muelleman et al., 2007; Rakauskas et al., 2009; Zwerling et al., 2005). Exposure to motor vehicle travel is greater for children in rural areas (Kmet and Macarthur, 2006), which reinforces the importance of parents, regardless of geography, to obtain correct information on child passenger safety issues. While limited resources and lack of trained personnel have been found in rural areas (Aitken et al., 2013), no studies have focused on the rural–urban differences in general anticipatory counseling practice patterns of HCPs as it relates to CPS, although other studies have found rural–urban differences in general injury prevention counseling (Agran et al., 1998; Hwang et al., 1997; Kmet and Macarthur, 2006; Lapidus et al., 1998; Niemcryk et al., 1996). A study by Probst et al. (2002) found that rural HCPs were less likely than their urban counterparts to provide general anticipatory guidance during a well-child visit, with no focus on CPS. Rural–urban differences in restraint use (Niemcryk et al., 1996) and motor vehicle injuries and fatalities (Aitken et al., 2013; Muelleman et al., 2007; Rakauskas et al., 2009; Zwerling et al., 2005) could be the result of lack of counseling regarding the proper way to restrain a child within a vehicle or the dissemination of misinformation regarding child restraints by HCPs in rural areas.

Determining current knowledge-levels of HCPs regarding CPS issues and frequency of counseling on this topic to parents with children in specific age groups would highlight problem areas in relation to misinformation or lack of information being disseminated to parents. This study seeks to ascertain if current child restraint knowledge-levels, information provision frequency, and confidence levels regarding advice provision related to CPS issues differ between rural and urban HCPs. It is hypothesized HCPs practicing in rural areas will be less likely to provide recommended CPS-related anticipatory guidance to parents than those residing in urban areas. In addition, authors hypothesize that rural physicians will be less confident in providing CPS-related anticipatory guidance to parents than urban physicians and will not be as knowledgeable regarding CPS issues.

2. Material and methods

Institutional Review Board approval from North Dakota State University was obtained to conduct a multistage, stratified, geographical cluster random sample plan used to collect data via mail survey from HCPs.

HCP contact information was obtained from state medical associations in North Dakota, South Dakota, Utah, Colorado, Wyoming, Nebraska, and Iowa. Physicians (MDs, and DOs), nurse practitioners and physician assistants with a pediatric specialty or subspecialty or specialties of family medicine, internal medicine, or general practice were surveyed, based on the assumption that providers in these specialties would perform the majority of well-child visits/check-ups. HCP contact information was stratified by rurality of the county in which the HCP practices. Rural–Urban Continuum Codes provide a structure that classifies counties by population size, degree of urbanization, and adjacency to a metro area or areas. According to the Economic Research Service (United States Department of Agriculture, 2014), the codes allow researchers who work with county level data to break the data into a more sophisticated classification than just metropolitan or non-metropolitan counties, which is extremely useful for the analysis of data in those nonmetropolitan areas that are related to degree of rurality, as in this study. The 2003 Rural–Urban Continuum Codes were used to define the counties based on their metropolitan status as has been utilized in previous injury prevention studies (Donaldson et al., 2006; Kaplan et al., 2013). Urban counties were defined as counties with a Rural–Urban Continuum Code of “1”, “2”, or “3”, and HCPs practicing in these counties were designated as urban. The ERS describes these as metropolitan counties. Rural counties were defined as counties with a code classification of “4” through “9”, and HCPs practicing in these counties were designated as rural. The ERS describes these as non-metropolitan counties.

2.1. Survey

The survey was developed based on a literature review, findings from previous surveys, and feedback from stakeholders who work extensively with CPS issues, including HCPs. 2,950 HCPs from designated urban counties and 2,136 HCPs from designated rural counties in the selected states were mailed a survey in January 2011. To ensure confidentiality and increase participation rates, survey identification numbers were not used. Surveys were color-coded to enable researchers to distinguish between rural and urban surveys. Due to funding issues, follow-up for non-responders was not an option for this study. Survey data was manually entered into SPSS Version 21.

The survey included questions related to percent of practice comprised of pediatric patients, proportion of workweek usually spent on well-child visits, and the frequency (“Seldom or Never”, “Occasionally”, “Frequently”, or “Always”) with which anticipatory guidance is provided to parents of pediatric patients in specific age groups (children younger than 1 year old, aged 1–4, aged 5–9, and aged 10–12). In addition, the survey included questions asking HCPs to rate their level of agreement with statements regarding CPS anticipatory guidance issues including, but not limited to, level of parent concern about how to correctly secure their child in a vehicle, knowing where to obtain training on CPS issues, if HCPs should provide counseling on CPS issues, and consistency of counseling received by parents from health professionals. HCP counseling on CPS issues in the survey refers to the education provided to parents of pediatric patients related to child

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