

Driver Report of Improper Seat Belt Position Among 4- to 9-Year-old Children

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ABSTRACT

OBJECTIVE: To determine the frequency with which drivers report improper seat belt positions among children 4–9 years of age and the frequency with which reported problems were attributable to the lap belt, shoulder belt, or both.

SUBJECTS AND METHODS: Analysis of driver responses to 5 questions related to seat belt positioning from the cross-sectional, phone-based 2007 Motor Vehicle Occupant Safety Survey. Belt position problems categorized as related to (1) shoulder belt and (2) lap belt. Improper belt position was compared across age groups (4–6 years, 7–8 years, and 9 years) and use of a child safety seat with χ^2 statistics or Fisher exact tests as appropriate.

RESULTS: Seat belt use was reported for 334 of 891 (37%) 4- to 9-year-old child passengers, and 261 (78%) drivers reported improper belt fit among these child passengers. Improper shoulder belt position (44%) was less common than improper

lap belt position (62%). At least one improper belt position was reported by 78% of drivers of 4- to 6-year-old children, 77% of 7- to 8-year-old children, and 79% of 9-year-old children ($P = .87$). There were no significant differences in report of improper belt position among children who never and those who occasionally use a child safety seat were compared.

CONCLUSIONS: Drivers frequently report improper lap and shoulder belt positions for their 4- to 9-year-old child passengers yet persist in restraining children by the use of seat belts alone. Clinicians can promote the use of size-appropriate child passenger restraint systems, including car seats and booster seats, to overcome the improper belt positions identified in this study.

KEYWORDS: child; passenger safety; seat belt

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WHAT'S NEW

Drivers identify problems with seat belt position in most 4- to 9-year-old children. Clinicians should ask not only if a child wears a seat belt but also how the belt fits to help determine seat belt readiness.

INTRODUCTION

INJURIES ASSOCIATED WITH poor seat belt fit in children were first described in the 1970s.¹ Since that time, distinct child passenger restraint systems have evolved to provide better crash protection for children at different stages of their physical development. The effectiveness of child passenger restraints in reducing risk of death and serious injury has been clearly demonstrated.^{2,3} Although the use of infant car seats has been widely accepted,⁴ drivers commonly use adult belt systems for older children who would still benefit from child safety seats, including car seats and belt-positioning booster seats.^{4,5}

Children who are prematurely placed in adult seat belts experience more problems with incorrect shoulder belt position compared with children restrained in high-back boosters,⁶ placing them at increased risk for injury in motor vehicle collisions.^{2,7,8} Safety experts recommend that children use belt-positioning booster seats from the time they outgrow their car seat until an adult seat belt fits properly.^{9–11} Proper seat belt fit is expected when a child is 57 inches tall, which is the average height of an 11-year-old child. To promote child safety seat use, 47 states have passed laws requiring that children older than 4 years use a child safety seat, but only 2 states require booster seat use beyond a child's 8th birthday.¹²

Little is known about improper seat belt positioning as it is observed by drivers of child passengers. In this study, we sought to determine the frequency with which drivers reported improper seat belt positions among children 4–9 years of age and the frequency with which improper belt positions were attributable to the lap belt, shoulder belt, or both.

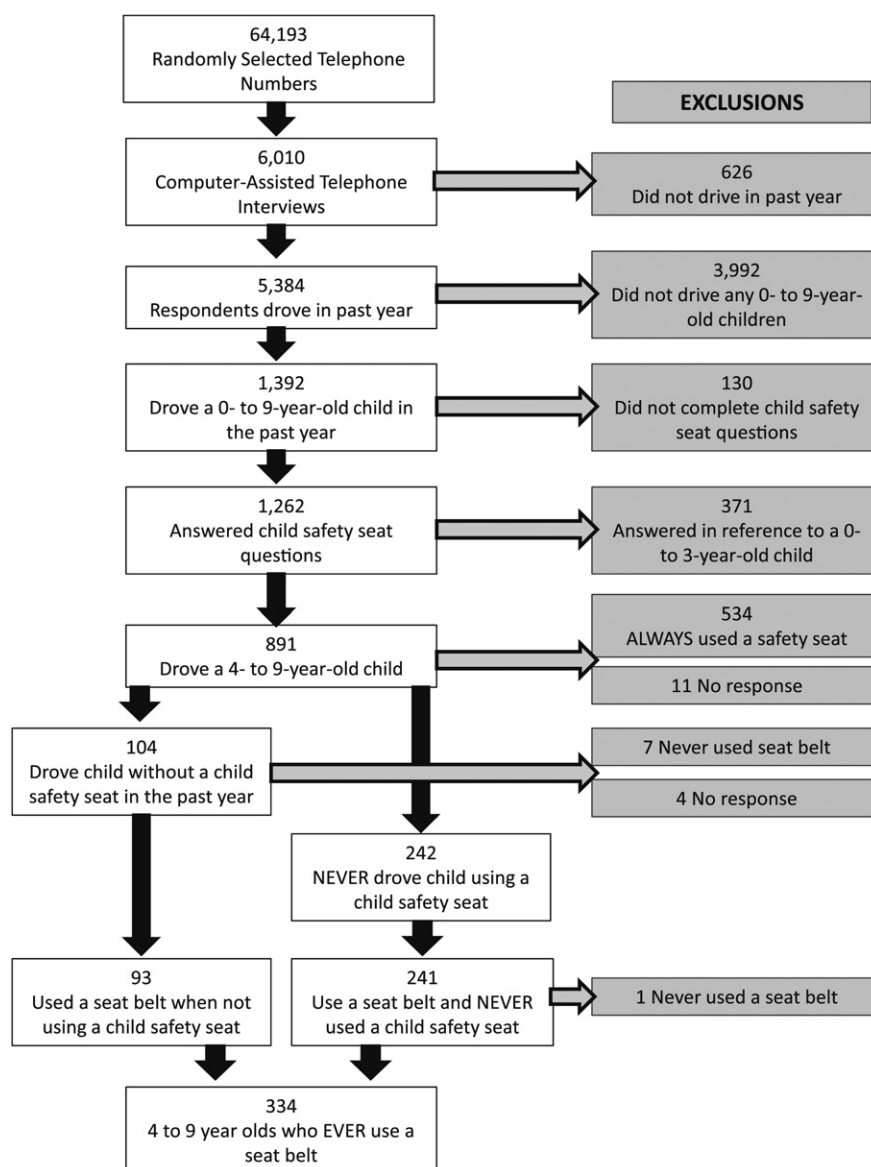


Figure 1. Subject flow diagram.

METHODS

We analyzed the most recent year of publicly available data collected for the Motor Vehicle Occupant Safety Survey (MVOSS). MVOSS was a national cross-sectional phone-based survey conducted by the National Highway Traffic Safety Administration (NHTSA), January to April 2007. Survey samples were based on a modified stratified random-digit dialing method and included 64,193 randomly selected landline telephone numbers. Computer-assisted telephone interviews were conducted with 4510 persons (16 years and older) from a general population sample and 1500 persons from an oversampling of younger adults (age 16–39 years). The participation rate was 66% for the general sample and 77% for the oversample. Further details of MVOSS survey methodology have been previously reported.¹³

The dataset contains responses from 5384 drivers (90% of 6,010 interviewed); 1392 (26%) of whom drove a child

age 0–9 years old in the past year. Questions related to child passenger safety (Appendix) were asked of 1262 drivers, 891 (71%) of whom drove with a 4- to 9-year-old child. We selected the 4- to 9-year-old age range because car seats are legally required for children younger than 4 years of age in most states.¹² If the respondent drove more than one child passenger younger than 9 years of age, questions were asked in reference to one randomly selected child within the age range. Survey respondent flow and the application of exclusion criteria are presented in the Figure 1.

Questions related to seat belt fit were asked of the 334 drivers who indicated the child rode in a seat belt alone on at least some trips. In this study, we analyzed responses to 5 statements related to seat belt position. Drivers of children who use seat belts were asked “Please tell me, yes or no, if the following things usually happen when the (AGE) wears a seat belt while riding in a motor vehicle. On most trips does?” (1) the shoulder belt go across the

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