Use of Restraint Devices to Prevent Collision Injuries and Deaths Among Welfare-Supported Children

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Synopsis

Evidence that death and injury rates for young children involved in automobile collisions could be reduced if children were restrained prompted the State of Tennessee to pass the nation's first child passenger law, a law that became effective in January 1978. Although similar laws have now been enacted throughout the United States, usually restraint devices are not provided to low-income groups who may have difficulty affording them. Few studies have examined the use of such devices by welfare recipients.

A total of 56 black women, receiving Medicaid and residing in inner city Memphis, were interviewed about their use of passenger restraints during automobile travel for their children ages 0–3 years. About two-thirds of the mothers interviewed said they rarely or never used child passenger restraint devices when transporting their child. Children age 3 years were significantly less likely to be transported in child restraint devices than younger children. Women who had received welfare payments for 3 years or more or who made fewer than one automobile trip a week with their child were significantly less likely to use child passenger restraints.

These results suggest that, in spite of child passenger laws, automobile restraint devices are not used for a high percentage of children ages 0-3 years receiving medical care under State and Federal Medicaid programs. Since treatment costs are paid under these programs when children are injured in collisions, program administrators may have strong incentives to increase the proportion of these children being restrained while traveling in motor vehicles.

Analysis of death certificates shows that 2.5 per 100,000 children ages 1–4 years in the United States are killed each year while riding as passengers in motor vehicles (*1*). To reduce the death and injury rates for young children in automobile collisions, child passenger laws have been passed in all 50 States, the District of Columbia, and the Territory of Guam (*2*). (American Samoa, Puerto Rico, and the Virgin Islands do not have any such laws.)

Since children not using restraints are at approximately 6 times greater risk for serious injury or death than children using them (*3*), State laws generally require children ages 3 and younger to use child passenger restraint devices (CPRDs) during automobile travel. In most instances, fines are levied for non-compliance (*2*). These laws have reduced collision injuries among 0-3-year-olds about 20 percent (*4*), but fatalities among young children have not decreased (*5*).

Generally, CPRDs are not provided to low income families, and use of restraint devices by this population has not been extensively studied. Use of CPRDs by welfare recipients is especially important to State and Federal governments, because governmentally funded Medicaid programs pay the costs of medical treatment when children in these families are injured in automobile collisions. Thus, it is important to determine if programs to provide CPRDs to welfare recipients can be justified on financial as well as humanitarian grounds.

In this paper we present the results of a study on the use of CPRDs by children ages 0–3 in an urban, black, welfare-recipient population in Memphis 12 years after Tennessee became the first State to pass a child passenger law.

Methods

We attempted to contact 159 mothers randomly chosen from a list of women ages 18 and older who were enrolled in an optional prepaid plan, Medicaid Plus, at an inner city clinic in Memphis. In-home interviews or, in two instances, clinic interviews were conducted with 111 women, a 70-percent response rate. Forty seven of the 48 nonrespondents had moved and could not be located; one refused to participate.

Black mothers who were former Medicaid Plus participants were employed as interviewers to increase rapport with the mothers involved and to provide greater assurance that their answers were accurate. The interviewers were trained extensively and were paid without regard to the number of interviews they conducted in an effort to reduce errors.

Respondents with children ages 0–3 were asked how often their youngest child traveled in a car, if they had a car seat for the child, and how often the child used a car seat. We calculated the percentage of trips during which a CPRD was used and classified mothers who said they always used CPRDs as users and women who said they never used CPRDs as nonusers. One woman who said she used CPRDs on 3 percent of car trips with her child, another who used them on 6 percent of her trips, and a third who used them on 36 percent of trips were also classified as non-users. Because self reports tend to be upwardly biased (*6*), a woman who said she used CPRDs on 50 percent of her child's trips and another who claimed 67-percent use were excluded from most analyses. The sample was restricted to the 54 women who could be classified more confidently as CPRD users or nonusers.

Results

As shown in the table, 17 (31.5 percent) of the 54 subjects were classified as CPRD users, a discovery consistent with earlier findings of low CPRD usage rates for less educated women (*7–9*), persons of low socioeconomic status (*7,10*), and by blacks and nonwhites (*11,12*). As found in previous studies of other populations (*3,13*), CPRD usage rates in our study were significantly lower for 3-year-olds than for younger children (Fisher exact 2-tailed *P*-value: 0.04) and, as shown in the table, children of CPRD nonusers were significantly older than those of CPRD users. CPRDs were used by 25 percent of children younger than 1 year, 45 percent of 1-year-olds, and 33.3 percent of 2-year-olds; none of the 3-year-olds were reported to use them.

Comparison of users and nonusers of child passenger restraint devices (CPRDs) for 0–3-year-old children of black welfare recipients, Memphis, TN[1]

Characteristic	CPRDs used on 0-35 percent of car trips (N = 37)		CPRDs used on 100 percent of car trips (N = 17)		
	Mean	SD	Mean	SD	P value[2]
Mother's age (years)	26.4	6.4	24.5	3.6	0.18
Child's age (years)	1.6	1.0	1.2	0.6	0.04
Child's car trips per week	3.8	5.2	6.8	7.9	0.16
Mother's age at first sexual intercourse (years)	15.8	1.5	16.3	2.4	0.47
Mother's age at first pregnancy (years)	17.2	2.7	18.6	3.0	0.11
Maternal education (grades completed)	10.9	1.4	11.3	1.0	0.24
Years receiving AFDC	6.0	4.0	3.3	3.8	0.03
Years at present address	3.4	2.6	6.5	8.1	0.14
Residents per room	1.3	0.7	1.0	0.4	0.08

[1] 2 subjects who said they used CPRDs on 50 percent and 67 percent of car trips were eliminated from this analysis.
[2] T-tests used to calculate 2-tailed P-values.
SD = standard deviation, AFDC = Aid to Families with Dependent Children.

Length of time participants in the study had been receiving welfare payments was also significantly associated with classification as a CPRD user or nonuser (see table). Among women receiving welfare payments for 0–2 years, 68.8 percent were users, compared with 16.2 percent of longer term welfare recipients (odds ratio: 11.4; 95 percent confidence interval: 3.16–40.83; Fisher exact 2-tailed *P*-value: <0.001). Limiting analysis to subjects whose youngest child was younger than 1 year, the shorter term welfare recipients were significantly more likely to use CPRDs (Fisher exact *P*-value: 0.01). Thus, the association between CPRD use and duration of welfare payments is not explained by longer term welfare recipients having older children who are less likely to use CPRDs.

Among 56 women with 0–3-year-olds, 72.7 percent said they made at least one car trip a week with their youngest child. These women were substantially more likely to use CPRDs than less frequent travelers (odds ratio: 10.2; 95 percent confidence interval: 1.61–64.38; Fisher exact 2 tailed *P*-value: 0.02). CPRD users made a mean 6.8 such trips a week compared with 3.8 for nonusers, a difference which was not statistically significant (table).

Discussion

Our results show that in spite of 12 years of legally mandated protection for child passengers in Memphis, 68.5 percent of 0–3-year olds receiving medical care under the Medicaid Plus program continue to travel in automobiles without adequate protection.

Since CPRD users tend to have lived at their current residences longer than nonusers (table), our inability to interview some subjects who had moved is likely to make our results conservative. The results also may be conservative because the study was confined to subjects who chose to participate in the Medicaid Plus program rather than receive medical treatment through the regular Medicaid program. While Medicaid Plus provides mothers with additional benefits, it requires participants to make different choices about their health care. It is a prepaid program for care only at the clinic rather than a cost reimbursement program for care anywhere. Mothers are required to use only one location for their primary care and to seek prior approval from the clinic before receiving emergency or other types of medical care. The program strongly emphasizes health promotion and disease prevention. Thus, the mothers who elected to participate in the Medicaid Plus program may be more likely to use CPRDs than would Medicaid recipients not participating in this program. Rates of CPRD use by welfare recipients in the United States in general are likely to be even lower than those we report.

In a St. Louis study, direct medical care costs were found to be $6,226 per 1–4-year-old injured in a motor vehicle collision (*14*). With inflation, that would be $10,861 in 1991 dollars (*15*). Considering that State and Federal Medicaid programs pay the medical bills when welfare-supported children are injured in motor vehicle collisions, it might be both more humane and more cost effective to provide these mothers with CPRDs.

Because CPRDs are frequently misused (*16*), welfare recipients should also be given instruction on how to use them. In addition, consideration should be given to redesigning CPRDs to make them more acceptable to children and to building CPRDs into cars. And since air bags that inflate automatically in collisions apparently can protect children as young as 3 years of age (*17*), their inclusion in motor vehicles should be promoted.

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