Accident Analysis and Prevention 42 (2010) 1041–1047

Contents lists available at ScienceDirect

Accident Analysis and Prevention

journal homepage: www.elsevier.com/locate/aap

Effectiveness of hands-on education for correct child restraint use by parents

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ARTICLE INFO

Article history:
Received 25 July 2009
Received in revised form
24 November 2009
Accepted 10 December 2009

Keywords:
Child passenger safety
Parent education
Car seat installation
Hands-on education
Child safety
Child safety restraint

ABSTRACT

This study evaluates whether a hands-on educational intervention makes a significant difference in the proper use of a child passenger restraint by a parent. The clinical trial design included a sample of 111 parents who were at least seven months pregnant and who were randomly assigned to one of two groups (56 intervention and 55 control). All participants received a free car seat and a standardized education session on the safety and use of child passenger restraints. The experimental group received an additional component consisting of a hands-on demonstration and return demonstration of correct installation and use in their own vehicle. Follow-up observation for correctness of use was done after birth using a standardized tool.

A total of 24 (22%) parents correctly used the car seat; of these, 18 (32%) were in the intervention group and 6 (11%) were in the control group. The intervention group was four times more likely to have correct use than the control group (odds ratio 4.3, p-value = 0.0074). The range for the number of errors per person was 0–7, with the majority (70%) having 0–2. The rate of errors was 33% less in the intervention group (ratio of 0.67). There were few serious errors in either group. No secondary variable (age, education, income, or help from others) had a significant effect on the outcome.

The hands-on educational intervention made a significant difference in the proper use of a child passenger restraint by a parent. This study demonstrates the value of hands-on teaching for learning how to install and use a child car seat.

1. Introduction

Despite the demonstrated effectiveness of child safety seats, their increased availability, and child restraint laws that have been in effect in every state for over 25 years, the leading cause of death among children over the age of 1 year in the United States continues to be injuries sustained as motor vehicle (MV) occupants (National Highway Traffic Safety Administration [NHTSA], 2009; NCHS, 2009a). In 2007, 1248 passengers under 15 years of age died in MV crashes in the United States. An additional 174,000 child occupants were injured (NHTSA, 2009). Infants less than 1 year of age also have a high death rate from MV crashes. In 2006, 137 infants under 1 year of age died in motor vehicle crashes in the United States, second only among unintentional injury deaths to suffocation (NCHS, 2009b).

The primary reason for MV occupant deaths for all ages is a failure to be properly restrained. Child restraints, used properly, are highly successful in reducing the risk of death or serious injury in a car crash. Child safety seats reduce fatal injury by up to 71% for infants and 54% for toddlers (NHTSA, 2009; Johnston et al., 1994). Unfortunately, many parents do not restrain their children or restrain them improperly. The result of this behavior is that children continue to be killed and seriously injured.

While Hawaii is consistently at or near the top in the United States for seat belt use, averaging 98% during annual Click It or Ticket Campaigns, its rate of child restraint use is much lower. Studies done by the University of Hawaii Department of Urban and Regional Planning since 1990 have shown use of child safety restraints to vary from year to year. After a drop in the overall Hawaii child restraint use rate to 43.2% in 2001, the rate climbed to a high of 87.5% in 2004. It then declined over several years to 70.4% in 2007 before reaching an all-time high of 90.3% in 2009. Infants are consistently more likely to be restrained, with a rate of 93.6% in 2009. Toddlers continue to have lower restraint use, with a rate of just 62.3% in 2007 and 87% in 2009 (Kim and Cooper, 2009). While this upward trend is encouraging, Hawaii child restraint use remains lower than the national average for both infants and toddlers, which was 98% for infants and 93% for toddlers in 2004 (Glassbrenner, 2005).

Studies to measure the impact of misuse of child safety seats show varying degrees of correctness of installation, with a critical misuse rate as high as 73% (Decina and Lococo, 2003; Winston et al., 2004). Critical misuse was identified as that most likely to put a child at risk for injury in a crash.

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doi:10.1016/j.aap.2009.12.011

One factor affecting parents' ability to properly use child restraints may be difficulty in reading the instructions. Wegner and Girasek (2003) measured readability level of child safety seat installation instructions, and found them to range from the 7th to 12th grade reading level. One study (NTSB, 1996) concluded that over half the parents or care givers who said they had read the manufacturer's instructions for the child restraint and/or the vehicle owner's manual still made errors securing the restraints in the vehicle or the child in the restraint. More than two-thirds of the children were not in the correct restraint for their age and size, and half of those who were in restraints were not in them properly.

Interventions to promote child passenger safety have taken many forms. The intervention found to be most effective was actually not a single strategy, but a multifaceted program which combined education with other components (DiGuiseppi and Roberts, 2000; Ebel et al., 2003; Zaza et al., 2001). No one combination was clearly more effective than others, however those that included access to a car seat were among the most successful. Other components that appeared repeatedly in effective programs were written materials that the parents could take home, demonstration of proper use of the seat, and counseling by a care provider. Programs with the most components were found to be the most effective. Programs were more effective when targeted to pregnant or new parents, or tailored to a specific group, such as the culturally based program targeted to a Hispanic community reported by Istre et al. (2002).

The introduction of a standardized national curriculum for child passenger safety education in the late 1990s may have had an impact on the increase in correct use of child restraints by parents in the United States. The upward trend in use of child restraints in Hawaii mirrors the increase in the number of educational opportunities available to parents. The first standardized child passenger safety technician training in Hawaii took place in 1997, which was the year that overall child restraint use was lower (31%) than at any time since observations began in 1990 (Kim and Cooper, 2009). While a direct association cannot be inferred, restraint use has increased as more car seat education programs for parents have become available.

Other factors that may have an impact on increased restraint use in Hawaii are the strengthening of the Hawaii child restraint law, and more active and visible enforcement. In January 2007 a new booster seat law took effect, requiring children up to the age of eight to be restrained in a child restraint or booster seat (Hawaii DOT, 2006). Since 2007, overall restraint use has increased from 70% to 90%, with toddler use rising from 62% to 87% (Kim and Cooper, 2009).

Police departments in all Hawaii counties actively enforce the child restraint law. In the past year the Honolulu Police Department has held a series of intensive enforcement events in various locations around the island, deploying 20–30 traffic officers to a designated area for 3–4 h at a time to issue citations as well as provide free car seats and installation teaching for families. Thirty to forty car seat checks and teaching sessions have been done each time, and up to 200 citations issued (E. Ching, personal communication, September 19, 2009).

Few programs reported in the literature included a well-designed evaluation component, making it difficult to measure effectiveness. One recent report was by Duchossois et al. (2008), who used a standardized assessment tool to evaluate participants attending child safety seat checkpoints to see if there was sustained improvement in restraint use months after they received education on proper installation of their child seat.

Based on a review of the literature, a study to evaluate a combination program, which included a multifaceted educational component, was designed. Other components of the program were distribution of a car seat and take-home reading material. Observation for correctness of use was chosen as the evaluation measure, since evidence supports the effectiveness of proper restraint use in reducing deaths and injuries from crashes.

The specific concept measured was that an educational intervention that included a hands-on demonstration and return demonstration of a new psychomotor skill (correct car seat installation) would be more effective in helping a parent retain the learning than an educational session that did not include the hands-on component. The hypothesis tested was that, given a standardized education program which includes a hands-on component, a parent will exhibit proper installation and use of a child passenger restraint in a vehicle.

2. Methodology

2.1. Design

The study design was a randomized clinical trial which included a control group and an experimental group. Eligible parents were enrolled between the seventh and ninth month of pregnancy, and randomly assigned to one of the two groups. Block randomization ensured that there was an equal number of participants in each group and an even balance at any one time between the two groups.

2.2. Setting

The setting for the initial data collection and educational intervention was a research center associated with a women's and children's medical center in Honolulu, which is on the island of Oahu. This teaching hospital affiliated with the University of Hawaii School of Medicine is the regional perinatal center for the Pacific and the leader in the care of women and children in the region. The hospital has over 6000 births a year, and provides care for the majority of critically ill infants and children in the state as well as from throughout the Pacific. Locations convenient for the parent were used for the hands-on educational component for the intervention group and for the follow-up check for correct use.

2.3. Participants

The target population was all expectant parents of at least 7 months gestation who lived on Oahu, had some connection with the medical center described above, and who planned to transport their infants in passenger motor vehicles. A convenience sample was recruited from the target population. Either one of the parents was eligible for participation. The sample was multiethnic, consisting primarily of Asians and Pacific Islanders, many of whom were of mixed ethnicity. The participants represented a range of socioeconomic levels and lived in both urban and rural areas.

Inclusion criteria were: (a) access to a passenger motor vehicle with which to transport the infant after birth, (b) agreement to attend a follow-up check when the infant was between 2 and 3 months old using the provided restraint, (c) ability to read and understand written and spoken English.

Exclusion criteria were: (a) birth weight of less than 5 lb, (b) fetal or infant death, (c) delivery prior to educational intervention, (d) anticipated move from Oahu before the infant was 3 months old, (e) previous hands-on instruction in the installation and use of a child restraint system.

The sample size was projected to include 61 parent/infant pairs in each group, for a total of 122 pairs enrolled. This allowed for a 15% dropout rate, for a minimum of 104 follow-up observations (52 parent/infant pairs in each group). The sample size calculation was based on the intervention group showing a 40% rate of correct child passenger restraint use compared to the control group having a 10% rate of correct use. The projected sample size was

computed to achieve a power of 90, or a 90% chance of detecting an effect from the intervention. The projected odds ratio was computed to be 6, which would make the odds of correct restraint use six times greater in the intervention group than in the control group. Approval was obtained from the Institutional Review Board (IRB) of the medical center from which the participants were recruited.

2.4. Procedure

2.4.1. Recruitment

Participants were recruited from the clinic, physician offices, parenting and childbirth classes, and by word of mouth. At the initial study visit appointment they read and signed an informed consent and completed a demographic questionnaire. A copy of the signed consent was given to the participant. The participant was then assigned a randomly chosen number placing him or her in one of the two groups, and the initial education session was delivered.

2.4.2. Educational intervention

All participants received a standardized education session on the use of child passenger restraints which consisted of a 26 min video about child passenger safety. In addition, the parent received brochures and a booklet published by NHTSA about correct child restraint use, a summary of the current Hawaii child restraint law, and a new car seat. At the end of the education session the control group participants received the car seat in the box with the manufacturer's instructions. The experimental group parents were scheduled for an additional session where they received the car seat with instructions and were shown how to correctly install the seat in their vehicle and (using a doll) how to secure the infant in the seat. The session ended when the parent demonstrated correct use. The hands-on portion of the education was provided by nationally certified Child Passenger Safety Technicians who had completed a standardized training developed by NHTSA.

2.4.3. Follow-up observation

Follow-up observation of each participant was done by a certified Child Passenger Safety Technician using a standardized observation tool. Follow-up visits were scheduled for a day, time, and place convenient for the parent when their infant was at least two months old. They were instructed to bring the infant in the vehicle restrained in the seat that was given to them as part of the study.

2.5. Potential risks

Potential risks to participants were minimal and included the possibility of anxiety, frustration, or embarrassment to the experimental group participants if they had difficulty installing the car seat despite the guidance of the technician. The control group faced potential physical, psychological, social or legal risks if they were unable to install their seat correctly using the manufacturer's instructions, or if they chose not to use the seat provided. The risks could have included injury to the infant and distress for the parents, citation by law enforcement for violating the child restraint law, and any of the risks listed above for the experimental group.

2.6. Procedures to minimize potential risks

Technicians were instructed to allow as much time as necessary for the parent in the experimental group to feel comfortable installing the seat. Parents in the control group received more information and support than those in the general population, including the provision of a free car seat. All personal information was kept confidential. Every participant had the right to return the car seat and withdraw from the study at any time. A data safety monitoring committee was established at the request of the IRB.

Any potential risks to participants were less than, or equal to, those they would have encountered in the normal course of their daily activity. Parents in the control group had the same information they would have had if they had purchased the seat themselves, in addition to the information they received from the educational session. Parents in the experimental group received more information and hands-on support than the general public, which should have put them at a lower risk than without the intervention.

2.7. Data collection

2.7.1. Data sources

Data were obtained using standardized questionnaires and through observation for correctness of use. Data collected were limited to demographic information from the participant at the time of enrollment, and observation and questionnaire information at the follow-up appointment.

2.7.2. Instruments

A questionnaire was used to collect demographic information from the study participants, including parent age, gender, household composition, ethnicity, educational level, number and ages of children, geographic area of residence, household income, and previous instruction on car seat use or installation. The instrument used for the observation portion of the study contained 14 items to document correct or incorrect installation and use of the infant restraint. Content and face validity of the instrument was determined by using the same items as those on forms used by nationally certified Child Passenger Safety Technicians at car seat checkups across the United States. Specific forms used for comparison were from Keiki Injury Prevention Coalition/SAFE KIDS Hawaii, Safe Kids Buckle Up Program of the National Safe Kids Campaign, Operation Kids Program of the International Association for Chiefs of Police, and the Center for Injury Prevention. A tool measuring similar elements was used by Margolis et al. (1992). The study instrument reflected the most current practice in correct child restraint usage, containing many of the same elements as those used in a survey reported by Kohn et al. (2000).

Each item on the observation tool indicated an incorrect use of the restraint. An item was marked with an X if observed. For a seat to be considered correctly used, no item could be marked.

Inter-rater reliability was established by each of the observers having independently observed and recorded several standardized misuse scenarios in their certification training. Inter-rater reliability was greater then 95%. The principal investigator also conducted random field visits to monitor observations during the course of the study.

2.8. Data analysis

The primary outcome was percent of correct use of the child passenger restraint by parents in the experimental group compared to the control group. All identifying information was omitted from the data set. All analyses were undertaken following the "intention to treat" principle, in which subjects are retained in their treatment group as randomly assigned, regardless of whether they adhere to their assigned treatment post-randomization. Participants were only dropped from the study if they failed to keep their follow-up appointment.

The primary outcome dependent variable was the correct use of the child restraint. Differences between the treatment and control groups were tested using a logistic regression probability model. The regression analysis yielded p-values showing the statistical significance of the differences between the study groups. The analysis

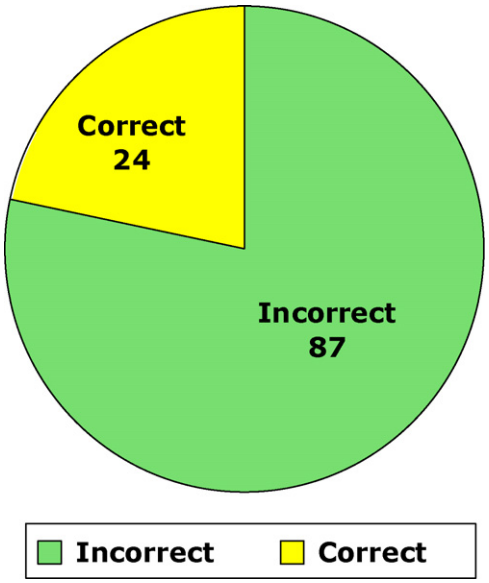

Fig. 1. Correct vs. incorrect use for total sample.

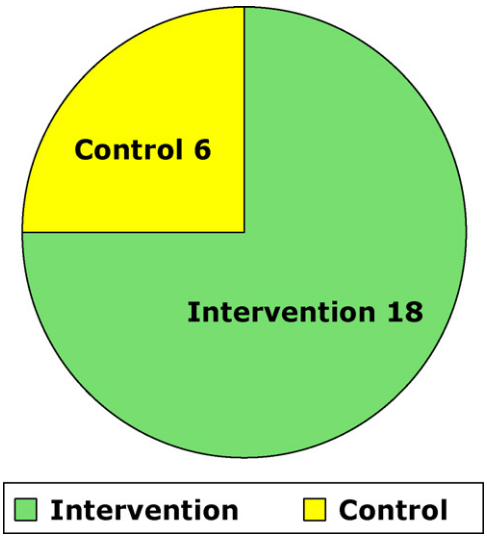

Fig. 2. Correct use intervention vs. control.

also provided regression coefficients that measured the magnitude of the differences. The relative odds of failing to use the seat correctly were calculated by taking the exponential of the regression coefficients. The standard error was used for testing the significance and estimation of the confidence limits of the relative odds.

Baseline data collected allowed for secondary analysis of selected variables. In the secondary regression analysis, data were analyzed for variations by age, educational level, income, and any teaching received about child safety seats between the initial study visit and the follow-up visit.

3. Results

A total of 124 participants were enrolled in the study, 64 in the intervention group and 60 in the control group. Three of those in the intervention group delivered their baby before they could receive the hands-on teaching session and were disqualified from further participation. Ten participants, five in each group, were lost to follow-up for a variety of reasons, including not responding to calls, not using the seat provided for the study, moving away or going on extended vacation, or not having a vehicle available. There were 111 participants remaining, 56 in the intervention group and 55 in the control group, and data from all these participants are included in the results.

3.1. Demographics

Participants ranged in age from 19 to 53 years, with the majority in their 30s. There were 95 women and 16 men. A high number were college graduates (81%) and had incomes above $50,000 (66%). The majority were of Asian descent, with the highest numbers of these Chinese ($n = 41$) and Japanese ($n = 44$). Other Asians were Filipino ($n = 11$), Korean ($n = 9$), and other ($n = 3$). There were 35 Caucasians and 15 Hawaiian/Part-Hawaiians. Nine were mixed or "other". The numbers add up to more than 111 because the participants could choose more than one ethnicity.

3.2. Correctness of use

A total of 24 participants (22%) had correct use of the car seat (Fig. 1). Of these, 18 (32%) were in the intervention group and 6 (11%) were in the control group (Fig. 2). The intervention group was over four times more likely to have correct use than the control group, when adjusting for other variables. The adjusted odds ratio was 4.3, and adjusted p-value was 0.0074.

Secondary variables tested in regression analysis for effect on the outcome were age, education, income, and help from others after the teaching session. No variable other than the intervention had a significant effect on the results.

3.3. Errors

The number of errors per participant ranged from 0 to 7, with the majority (70%) having 0–2 (Fig. 3). The most frequently occurring errors were the harness straps not being snug on the child ($n = 48$) and the car seat not tightly secured in the vehicle ($n = 42$). Other common errors were the harness retainer clip not being at the child's armpit level ($n = 37$), harness straps not being at or below the baby's shoulders ($n = 20$), and extra padding placed between the infant and the back of the car seat ($n = 16$). Other errors were the car seat being at too steep an angle of recline ($n = 10$), carry handle not placed in the proper position for travel ($n = 9$), and locking clip not used properly ($n = 8$).

Less frequent errors were the seat belt not routed correctly through the car seat and the seat belt not being locked (5 each). Other errors were the child not being restrained in the seat or the seat not being anchored in the vehicle (2 each). Two potential errors were not found with any participant: car seat placed in front of an air bag and seat not positioned rear facing. The rate of errors was

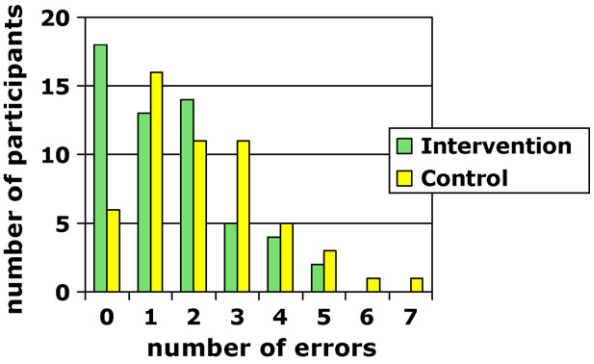

Fig. 3. Number of errors in intervention and control groups.

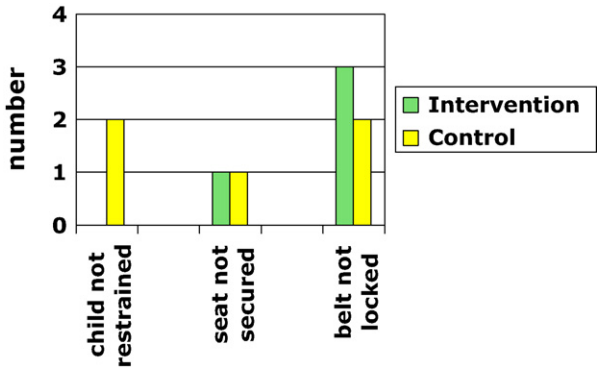

Fig. 4. Serious errors in intervention and control groups.

33% less in the intervention group than in the control group (ratio of 0.67).

There were few serious errors, which are defined as those that alone could have resulted in death or serious injury in a crash. Serious errors were observed in both the intervention and the control groups. They included not securing the child seat in the vehicle, not restraining the child in the car seat, and not locking the seat belt (Fig. 4).

4. Discussion

The results show that the hands-on educational intervention made a significant difference in the proper use of a child passenger restraint by a parent. The hands-on demonstration and return demonstration of this skill was more effective in helping the parent retain the learning than the educational session that did not include the hands-on teaching.

One explanation for this result is that the learning was of a psychomotor skill, and actual hands-on practice would be expected to reinforce the cognitive learning about the skill. Modeling, demonstration, return demonstration, and practice are all components of learning a psychomotor skill.

Research has shown that there is overlap between cognitive and psychomotor ability and that they are not distinct and separate (Chaiken et al., 2000). Chaiken et al. found that people who did well cognitively also performed well on psychomotor skills, which they defined as tasks requiring perceptual and motor ability rather than strength, stamina, and dexterity. They also noted that performance on psychomotor skills improved with practice. This point was emphasized by Oermann (1990) in her discussion of psychomotor skill development in nurses. Practice and feedback are both important in psychomotor learning, as is initial demonstration of the skill. Oermann points out that "motor skills have a cognitive base" (p. 202), and that there is also an affective aspect involving the learner's values and emotions.

The parents in the intervention group were not taught the hands-on skill in isolation, but as one component of a multifaceted program, which included both cognitive and affective aspects as well as the psychomotor skill.

Very few parents in either group had serious errors. This may demonstrate that all parents received some benefit from the other components of the multifaceted program, including the video, printed material, and the manufacturer's instructions with the car seat.

Social Cognitive Theory (Elder et al., 1999) recognizes that people's cognitive processes interact with their behavior. It describes outcome expectancies, which is the belief that a certain behavior will lead to a positive outcome. The parents in this study exhibited that pattern, in that they believed they would be able to accomplish the task they set out to do. This was shown by participants in both groups—those who got just the car seat to take home and install, and those who had the additional instruction. Neither group demonstrated high anxiety or the fear that they would be unable to install the seat properly.

Unfortunately, the reality in this case was that neither group was able to perform the task as well as they expected. This may be partly due to the complexity of the task, and partly because they were only observed once after the teaching session when they may not have had enough practice. An advantage to conducting several follow-up sessions would be the chance for the parents to be corrected on improper use, and then to practice the new learning. In this way correct use would more likely be achieved.

Roden (2003) found that parents who were of a higher socioeconomic level believed that they were able to perform child health promoting activities more than those who had lower income. The majority of the participants in this car seat study had high income. This may explain why few of the parents in either group had many errors, or serious ones. There may also have been some self-selection bias in the sample, in that parents who are more educated and have higher income may be more likely to seek out programs that they perceive will benefit their family.

5. Limitations

There were some limitations to this study. First, this study measured proper use just one time after the intervention. It could be that at a subsequent observation several months later the results would be different for some of the participants, and the rate of proper use would change. It is possible that correct use would increase with repeated regular use of the child seat. It is also possible that correct use would decrease. The parents might try harder when they were preparing for the observation visit, knowing they would be evaluated, and then become less vigilant later.

Another limitation is the lack of an absolute way to restrict either group from receiving additional education, including hands-on instruction, from other sources outside the study. At the time of the follow-up visit, participants in both groups were asked if they had received any additional instruction or assistance in installing their seat since the initial intervention. Most of them answered no to this question. Of those who did have help, it was most often from friends or family members and not from trained personnel. This was analyzed to determine if it did make a difference, and it was found that the help had no measurable effect on the outcome.

Because participants were self-selected by volunteering for the study, ability to generalize to the larger population may be limited. The majority of the participants were in their 30s, well educated, with relatively high incomes, and living in an urban area. There was also a higher proportion of Asian ethnicity than in the general population. It is possible that younger, less educated parents with lower incomes and different ethnicities would have different results.

There may be unique characteristics of Oahu as an island county in the Pacific that could limit the ability to generalize the findings of this study to other locations. On the other hand, the city of Honolulu has many characteristics in common with other large U.S. cities, and may be more like them than different. Additionally, the hands-on educational component of this study is from a standardized curriculum that is identical to that offered across the United States.

It was not possible to use all of the secondary variables in the data analysis. Gender was one of these. Gender was noted for each person enrolled, but in practice it was not always the person enrolled who installed the car seat, especially for the control group. One explanation for this was that the advanced state of pregnancy made it difficult for most mothers to physically install the car seat

even though they had signed the consent and watched the video. In other cases both parents worked together to install the seat.

The item for ethnicity allowed the participants to choose as many of the categories as applied to them. Since the categories were not mutually exclusive, ethnicity was another variable that could not be analyzed for its effect on the outcome.

6. Recommendations

6.1. Research

This study should be replicated with different populations and in different locations. Including younger families, those with less education, and those from lower socioeconomic groups may yield new information. Those who live in rural areas may have different characteristics and learning needs than urban residents.

Making sequential observations over a longer period of time is recommended for a future study. It would be helpful to learn if the knowledge and skills are retained over a longer time or if they decrease or are lost. The time frame for conducting the first follow-up visit could be lengthened in future studies. Two months after birth is difficult to arrange. Many parents are immersed in the care of their new infant, exhausted from lack of sleep, and focused on their own needs. Doing perhaps three visits over the course of the first year would provide more information on retention of the learning, and would also allow errors to be corrected and reevaluated on the next visit.

The criterion for receiving a passing score on the observation tool for this study was to have zero errors. This is the ideal goal, but it may be too stringent. Many of the participants had just one or two errors—still less than most parents in the general population. A subsequent study could make the criterion for passing be two or less errors, as long as none of them was serious. This would increase the pass rate, and the installation would be safe enough to protect the child from all but the most severe crashes.

The errors could also be analyzed using a continuous variable rather than the nominal data in the current study. A scoring system would assign a value to each error, and a passing score would be predetermined. The scores should be weighted so that the most serious errors are given a high enough value that the installation would fail with any one serious error.

Another recommendation is to restrict the study car seat to only one type. In this study parents were given the choice of an infant seat with base or a convertible seat. Most parents use an infant seat as the first seat for the baby. If a car seat is supplied, this might be the best one. It would avoid a problem encountered in this study of the parents saving the convertible seat until the child was older. Another option is to not supply a car seat. This allows the parents to choose the child restraint they want to use, and still receive the teaching. This is more "real life", and trained technicians should be able to teach any parent about any car seat. The variable of different vehicles cannot be controlled, and it is not essential to control for the child restraint.

A recommendation that might reinforce learning for the families in the intervention group is to videotape them while they are receiving the hands-on instruction. They would then be given a DVD of the session that they could view at home. When they had a question about a specific detail of the installation, they would be able to watch the DVD to see and hear what they had experienced in the teaching session.

6.2. Practice

This study demonstrates the value of hands-on teaching for parents to learn how to install and use a child car seat. Everyone who transports a child in a motor vehicle should have access to this type of education. This includes not just new parents, but grandparents, foster parents, and other caretakers. Nurses, physicians, social workers, and others working with families should encourage them to seek out this kind of teaching. They should also advocate for more programs which offer this service.

There is both need and demand in Hawaii for this hands-on teaching. On Oahu alone there are nearly 900,000 residents in an area that is 44 miles long and 30 miles wide. There is a dense urban core, many suburban communities, and outlying rural areas. The roads range from multi-lane freeways to small city and country lanes. Enforcement of traffic laws, especially those for seat belts and child restraints, has become more stringent as more police officers have become trained as child passenger safety technicians. This has increased the demand by parents for education on how to properly install their car seat. Currently there are nine designated Inspection Stations on the island with certified technicians where parents can attend a community car seat checkup or make an appointment to learn how to install their car seat. These are located at hospitals, community health centers, and military bases. Most of these sites have long waiting lists for appointments, and new parents often deliver their baby before they can receive the education. Because families are not able to drive to another county or state to access these services, more programs at convenient locations would help meet the need that exists.

Everyone who works with families of young children should learn key points about what to look for in correct installation and use of a child car seat. They can help parents identify incorrect use, and refer them for more in-depth instruction from trained technicians. They can also teach them important basics, such as not putting the car seat in front of an air bag, and not placing an infant forward facing in the car. Having more health care providers trained as child passenger safety technicians would enable them to provide this education as part of their practice.

7. Conclusion

Health promotion and injury prevention are key components of care for children. It is far more beneficial to keep them well and healthy than to try restoring them to health after an injury. The cost of motor vehicle crash injuries to children is enormous, both in direct medical expenses and in loss of future earnings and productivity. Anyone who works with children and families is in an optimal position to prevent many of these injuries by helping parents learn to properly restrain their child.

Funding

This study was supported in part by a Research Centers in Minority Institutions Award, P20 RR11091, from the National Center for Research Resources, National Institutes of Health. Its contents are solely the responsibility of the author and do not necessarily represent the official views of the NCRR/NIH. Financial support was also provided by grants from the Hawaii State Department of Health and the Office of Research and Extramural Programming of the University of Hawaii School of Nursing and Dental Hygiene.

Acknowledgements

The author would like to acknowledge the child passenger safety technicians (all of them RNs) who provided the hands-on teaching and follow-up observations for their critical role in this study. A special thanks to Vicki Landenberger, Katie Barbieto, Mike Minuto, Carol Moreno, Lisa Dau, and Nola Faria.

Appreciation also goes to Jim Davis, Patty Iwamoto, and Sandra Sinclair of the Clinical Research Center at Kapi'olani Medical Center for Women and Children and the University of Hawaii at Manoa for their support with enrollment, the initial education sessions, and data collection and analysis.

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