

Awareness of Pediatricians and Family Physicians of the Child Passenger Safety Guidelines in Jeddah, Saudi Arabia

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Submission: 19 Oct 2019

Accepted: 14 Jan 2021

Citation

Aldarmasi MA, Alsati HS, and Alkhusi NA. Awareness of pediatricians and family physicians of the child passenger safety guidelines in Jeddah, Saudi Arabia. *JKAU Med Sci* 2021; 28(1): 21-27. DOI:10.4197/Med.28-1.3

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Abstract

The most prevalent obstacle to the utilization of child safety seats is a lack of awareness of their benefits. Recommendations from the American Academy of Pediatrics and other organizations call on physicians to know and promote the health and safety benefits of child safety seats use. The objective of the study was to assess the knowledge and self-reported practice of pediatricians and family physicians toward the American Academy of Pediatrics recommendations for child safety seats use. A cross-sectional study was performed in Jeddah, Saudi Arabia, on a target population of pediatricians and family physicians. Data were collected through an electronic self-administered questionnaire. There were 104 respondents; 63% were female, 66% were parents, 63% were pediatricians and 37% were family physicians. Of the respondents, 26.9% had high knowledge, 58.6% had low knowledge and 14.4% had no knowledge. While the level of knowledge varied significantly, older respondents ($P = 0.025$), parents of children ($P = 0.001$) and those with higher professional levels ($P = 0.007$) were more likely to have a higher level of knowledge. Important barriers to child safety seats use are the lack of enforcement laws (67%), large families (53%), and cost (44%). The study shows that physicians possess limited knowledge regarding the guidelines for child safety seats use.

Keywords

Car seat; Injury prevention; Restraint; Safety

Introduction

Despite significant progress over the past decades in promoting and enforcing children's car safety, road traffic accidents remain one of the leading causes of death among younger children in developed countries^[1]. In Saudi Arabia, the road traffic injuries and non-communicable diseases are the main causes

of death and disability^[2]. Although there is inadequate data on children's mortality or injuries secondary to road traffic accidents in the Kingdom of Saudi Arabia (KSA), given the overall magnitude of the problem, childhood mortality and injuries are estimated to correlate with published overall mortalities and injuries. Hence, major interventions are needed to decrease road traffic

injuries through combined efforts of the government and the public^[2].

The use of a child safety seat (CSS) became mandatory in the KSA in 2018^[3]. An audit of road accidents over a period of one year found 16% of the 361 victims were under the age of 10 and 47% were between ages 11 and 30^[4].

The leading cause of road traffic accident injuries in the United States (US) is seat belt negligence^[5]. More recent data has shown that CSS use reduces the risk of infant death by 71%, and toddlers death by 54% in a passenger vehicle^[1,6,7]. However, there are many obstacles to their use, including lack of awareness, lack of law enforcement, and financial and cultural difficulties. The lack of awareness of CSS benefits seems to be the most prevalent reason why parents are not committed to use them^[8]. Using a regular seat belt at an early age against the recommendations will increase the risk of injury by more than threefold^[9]. In the 1990s, the US government played a significant role in promoting CSSs through hospitals by providing discharged newborns with CSSs^[10].

The Community Preventive Services Task Force proposes regulations on CSSs and CSS distribution and offers educational programs to increase restraint use and to minimize injuries and deaths of child passengers^[10,11].

The American Academy of Pediatrics (AAP) indicates in its revised policy statement regarding CSSs that all pediatricians in all health supervision visits should know and support the recommendations for their use^[1]. The proper use of a CSS is as important as using it; improper installation or misuse can be critical and render it ineffective. Therefore, preventive factors

such as CSS technicians should be considered to avoid CSS misuse^[12], some of which are critical and can potentially put a child at significant risk, (Table 1)^[12,13].

Pediatricians and family physicians' knowledge about the recent recommendations for CSSs is crucial for ensuring the accuracy of public education on them^[14]. In addition to physicians, community agencies, schools and media play essential roles in CSS promotion and public awareness. Furthermore, manufacturers must look at the barriers and difficulties of using CSSs^[15].

Aims of the Study

1. To assess the knowledge of the pediatricians and family physicians toward the American Academy of Pediatrics recommended child passenger safety information, in Jeddah, KSA (2017-2018).
2. To identify the most important barriers to child safety seat use from the perspectives of pediatricians and family physicians in Jeddah, KSA (2017-2018).

Materials and Method

This study is a cross-sectional electronic questionnaire sent to pediatricians and family physicians across government and private practices in Jeddah between August 2017 to February 2018. The electronic questionnaire was designed using the web-based software SurveyMonkey (<http://www.surveymonkey.com>), which allowed a secure and anonymous distribution *via* the internet.

The questionnaire was comprised of two sections. The first section addressed personal and socio-demographic data, including age, gender, parental

Table 1. Child safety seat misuse categories

Critical Misuse	Serious Misuse	Any Misuse
Age/weight inappropriateness of child safety seat Harness strap not used Improper harness belt paths/slots Improper use of locking clip to seat belt Improper vehicle seat belt paths/slots Incorrect seat direction Incorrect location of child safety seat Loose harness straps Loose vehicle seat belt Unbuckled harness strap Unbuckled vehicle seat belt Visible damage to child safety seat	Includes all critical misuses plus: Harness retainer clip not used Harness retainer clip too high or too low for infant Improper lower anchor paths/slots Loose lower anchor webbing Unbuckled lower anchors Incorrect recline angle of child safety seat	Includes all critical and serious misuses plus: Harness belt twisted Use of nonregulated products, or thick clothing Lower anchors used with vehicle seat belt contrary to manufacturer guidelines Vehicle seat belt webbing twisted Incorrect use of child safety seat lock-offs Locking clip used unnecessarily Child safety seat handle in incorrect position for car travel Incorrect spacing between child safety seat and vehicle seat contrary to manufacturer guidelines

status, specialty, academic level, certification and whether a physician works at a public or a private sector. The second section consisted of questions related to knowledge of and barriers toward the CSSs. The four knowledge questions were: (1) At what age the child should use a regular seat belt? (2) At what age should a CSS be placed forward-facing? (3) At what age should a child use a booster seat? and (4) What are the reasons for children not sitting in a front passenger seat? In addition, physicians were asked their opinions about using CSSs as an effective safety measure and whether they advise the parents to use them.

Statistical Analysis

The main outcome of this study was the knowledge of pediatricians and family physicians of the CSS safety information and its application. They were asked four knowledge questions. The physicians were categorized into high knowledge, those who answered more than 50% of the questions correctly, low knowledge, those who answered less than 50% of the questions correctly, and lack of knowledge, those who answered none of the questions correctly. The AAP Guidelines were used as the reference for the answers.

The data were coded and entered into the IBM SPSS Statistics for Windows, Version 22 (IBM Corp., Armonk,

NY USA). The baseline characteristics and barriers were summarized by using descriptive statistics, while the categorical variables between subgroups were described using frequencies and percentages. The associations were compared using chi-squared and Fisher's exact tests, depending on the subgroup's size. The P-value was set at less than 0.05, which was considered the level of significance. Ethical approval for conducting the study was obtained from the Ethical Committee of the Faculty of Medicine at King Abdulaziz University. Informed consent to participate was implied by the acceptance of answering the electronic questionnaire.

Results

There were 104 respondents consisting of 63% females, 63% pediatricians and 37% family medicine physicians. Of the physicians, 56% were board certified, and 88% worked at governmental institutions (Table 2).

The pediatricians and family medicine physicians were asked a set of four knowledge questions related to the AAP recommendations. Their responses are presented in Tables 2 and 3. Only around 9% of the participants answered all the questions correctly, 18% answered three out of four questions correctly, 28% answered two questions correctly, and 30% answered

Table 2. Description of respondents

Variable	Items	N (%)
Sex	Female	66 (63.46)
	Male	38 (36.54)
Age	<30	39 (37.5)
	30 - 39	37 (35.5)
	40 - 49	13 (12.5)
	50 - 59	13 (12.5)
	>or = 60	2 (1.92)
Parenting Status	No children	35 (33.6)
	Have children	69 (66.4)
Practice	Predominantly general pediatric	38 (36.5)
	Sub-specialized pediatric care with limited general pediatric	27 (25.9)
	Family medicine with regular pediatric care service	17 (16.3)
	Family medicine with limited pediatric care service	22 (21.5)
Academic Level	Resident	46 (44.2)
	Specialist/fellow/assistant consultant	30 (28.8)
	Consultant	28 (26.9)
Certification	North America Board	9 (8.6)
	European Board	3 (2.88)
	Arab Board	13 (12.5)
	Saudi Board	63 (60.58)
	Other	16 (15.38)
Affiliation	Government	92 (88.5)
	Private	12 (11.5)

Table 3. The association between gender, age, parenting status, practice, academic level, certification, affiliation and whether they advise parents or not with the level of knowledge

Respondents	High	Low	No	P-value*
Gender				
Male	14	21	3	0.13
Female	14	40	12	
Age				
< 30	3	30	6	0.025
30-39	14	17	6	
40-49	6	7	0	
50-59	4	7	2	
> or = 60	1	0	1	
Parenting Status				
No children	1	29	5	<0.001
Have children	27	32	10	
Practice				
Predominantly general pediatric	6	23	9	0.078
Sub-specialized pediatric care with limited general pediatric	11	13	3	
Family medicine with regular pediatric care service	7	10	0	
Family medicine with limited pediatric care service	4	15	3	
Academic Level				
Resident	5	35	6	0.007
Specialist/fellow/assistant consultant	10	14	6	
Consultant	13	12	3	
Certification				
North America Board	5	4	0	0.170
European Board	0	2	1	
Arab Board	6	4	3	
Saudi Board	14	40	9	
Other	3	11	2	
Affiliation				
Government	22	57	13	0.122
Private	6	4	12	
Advising Parents				
Always	9	20	8	0.592
Sometimes	12	29	5	
Never	7	12	2	

*Chi-squared and Fisher's exact tests were used to assess the association between the level of knowledge and the sociodemographic variables. Correlations with p-value < 0.05 are considered statistically significant (Bold font).

only one question correctly. According to their answers, the responders were categorized into high (27%), low (59%), and no knowledge (14%) groups. The knowledge level was significantly higher among those who were middle-aged ($P = 0.025$), those with children ($P = 0.001$) and those with higher professional levels ($P = 0.007$). There was no statistical difference in the knowledge between males and females and between pediatricians and family physicians (Table 3). Pediatricians were found to be keener to advise parents about CSSs. Additionally, all the participants agreed that using CSSs effectively reduces children's traffic injuries.

The most important barriers to CSS use from the pediatricians and family physicians' perspectives were

a lack of law enforcement (67%), not practical for large families (53%), healthcare provider unawareness (44%), CSS cost (44%), lack of time (37%) and uncooperative child(ren) (31%). Participants were allowed to choose more than one barrier.

Discussion

A cross-sectional study *via* a survey sent to the eligible pediatricians to assess their knowledge, attitudes and practices related to the AAP CSS recommendations, showed that 52.9% of pediatricians answered the questions correctly and were thus identified as the high knowledge group. Those with a high level of knowledge were less likely to report obstacles to communicating CSS information, were more likely to assign adequate

time for discussing CSSs with parents, and had greater confidence in negotiating this topic^[16]. The purpose of the study was to assess the physicians' knowledge of the guidelines for CSS safety and to outline the barriers that prevent doctors from educating parents on this subject in the Saudi setting. The study found that more than two-thirds of the physicians showed inadequate knowledge regarding the CSS safety guidelines. The majority had a low level of knowledge while some had no knowledge at all. The physicians' parental status, age, and academic level were the factors affecting their knowledge levels. Physicians aged 30-39 who had children and were consultants had the highest knowledge.

General pediatricians scored the highest in advising parents regarding the CSS guidelines followed by sub-specialized pediatricians and, finally, family physicians. Most physicians agreed that the lack of law enforcement was a huge barrier in implementing CSS guidelines. In a study comparing the two specialties, the pediatricians questioned families more than family physicians about restraint use and stated being a bit more comfortable with the transition points from CSS to booster seats and booster seats to seat belts. Both groups reported providing less motor safety education as the children increased in age from one to eight years old^[17].

The counseling of parents by healthcare professionals should not be left to pediatrician and pediatric emergency medicine, although emergency medicine physicians agreed that they play a role in parents' CSS education and that they can make a difference in how parents restrains their children in automobiles. They agreed that the ideal setup was to have a nurse or technician to provide such education in the ER^[18]. In another survey, the emergency physicians stated they did not feel they had adequate knowledge to disseminate such information to parents^[19]. This is likely the most important barrier that prevents healthcare professionals from providing CSS counseling to parents. Another significant opportunity is at the discharge time from the nursery or the pediatric wards. Eighty-five percent of physicians understood that information about CSSs should be included in discharge instructions; however, in a review of randomly selected records of motor vehicle crash site visits, only 13 out of 152 found documented CSS information in the discharge instructions^[19].

A significant body of research has been conducted in developed countries on the prevalence of CSS use and the level of parental knowledge, beliefs and attitudes regarding CSSs, and their findings show a correlation between awareness and socioeconomic status^[12,15,20-22]. Furthermore, a program of hospital-based education is being used to improve the awareness and use of CSSs among birthing mothers, which has helped to increase the overall knowledge and use of CSSs^[22]. Unfortunately, we are still in the initial phases of researching this subject in our local context. We received with joy the new traffic rules in Saudi Arabia in 2018, as they made CSS use mandatory and prohibited the seating of children in the front passenger seat. In the future, we hope to conduct research on parental perspectives and barriers toward using the CSSs, study the effect of interventional programs and acquire access to specific children's injury data from the responsible governmental bodies.

Limitations

Although the study sample is acceptable for such questions, it is limited by the nature of its design and by convenience sampling, which may lead to selection bias.

Conclusion

The study shows that pediatricians and family physicians possess limited knowledge regarding the guidelines for CSS use. A lack of law enforcement before 2018 in KSA and the perception of limited knowledge by some physicians were found to be the most critical barriers to counseling families. Further research is needed to understand the local epidemiology of injuries and the culture and practices toward child car safety. In addition, opportunities for dissemination of Saudi Arabia Transport recommendations to physicians and strategic implications should be considered for promoting physician awareness of the CSS recommendations in the primary care setting.

Conflict of Interest

The authors declared that there is no conflict of interest that is related to this study and this article.

Disclosure

The authors did not receive any type of commercial support either in the form of compensation or financial support for this case report. The authors have no financial interest in any of the products, devices, or drugs mentioned in this article.

Ethical Approval

The study was approved by the Ethics Committee of the KAUH in Jeddah, Kingdom of Saudi Arabia, also known as the Institutional Review Board of Hospitals (Reference No 370-17).

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مدى وعي أطباء الأطفال وأطباء طب الأسرة بقواعد استخدام مقاعد الأمان المخصصة للأطفال بالسيارة في مدينة جدة، بالمملكة العربية السعودية

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المستخلص. تتمثل العقبة الأكثر شيوعاً أمام استخدام مقعد سلامة الطفل بالسيارة في قلة الوعي بفائدته. لذلك قامت عدد من المنظمات مثل الأكاديمية الأمريكية لطب الأطفال وغيرها بتوصية الأطباء بأهمية معرفة قوانين كرسي الطفل في السيارة؛ حتى يعززوا من استخدامه. تهدف هذه الدراسة لتحديد مدى معرفة أطباء الأطفال وأطباء طب الأسرة بقوانين كرسي الطفل في السيارة. تم عمل هذه الدراسة بمجموعة من مستشفيات مدينة جدة. كانت الفئة المستهدفة هم أطباء الأطفال وأطباء طب الأسرة. أولئك الذين أجابوا بأكثر من ٥٠٪ بشكل صحيح، تم تصنيفهم بأن لديهم معرفة عالية، وأقل من ذلك بمعرفة منخفضة، وأولئك الذين أجابوا بإجابات خاطئة بعدم المعرفة. كان عدد المستجيبين ١٠٤، (٦٣٪) منهم إناث، و (٦٦٪) آباء. (٦٣٪) منهم أطباء أطفال و (٣٧٪) أطباء أسرة. أوضحت النتائج بأن (٢٦,٩٪) لديهم معرفة عالية، (٥٨,٦٪) لديهم معرفة منخفضة و (١٤,٤٪) لا معرفة لديهم. مستوى المعرفة كان متباين بصورة واضحة، فالأكبر سناً ومن لديهم أطفال ومن لديهم دراسات عليا كانوا أفضل نتائج. أهم العوائق لاستخدام كرسي السيارة هي الانتقال إلى تطبيق القوانين بنسبة (٦٧٪)، والأسرة الكبيرة بنسبة (٥٣٪)، كذلك التكلفة العالية بنسبة (٤٤٪). أظهرت الدراسة بمحدودية معرفة أطباء الأطفال وأطباء الأسرة فيما يتعلق بقوانين استخدام كرسي الطفل في السيارة.