

Assessment of car seat safety awareness among parents: The vital role of family physicians

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ABSTRACT

Objective: Car seat safety is critical to protecting children from injury in the traffic accidents. This study's objective was to evaluate parents' knowledge and attitudes regarding car seat safety.

Material and Methods: This descriptive study involved parents with children aged between 0-18 years. The data collection method utilized a questionnaire of 31 questions that sought to assess the parents' knowledge and opinions on the use of car seats.

Results: The research involved 400 people, and the results showed that only 29% of them used a child car seat when transporting their children. Most participants (69%) reported that their child was not in a car seat while traveling. The level of education of both parents was found to be significant in determining whether or not there was a child car seat in the vehicle ($p < 0.001$). Additionally, 80% of the participants did not receive any education or training on correctly using a child car seat, and 94% expressed a desire for information from doctors.

Conclusion: The study highlights the need for more education and awareness about the importance of proper child safety in vehicles. It is crucial that medical practitioners, with a particular emphasis on primary healthcare professionals, are aware of this demand and take appropriate measures in response.

Keywords: Car seat safety, Parental knowledge, Traffic accidents, Family physicians, Education, Preventive healthcare.

INTRODUCTION

The issue of child passenger safety is a global concern. Many countries, especially in the developing world, lack laws mandating the use of car seats and booster seats, and have limited access to appropriate child restraint systems. Ensuring the presence of a child restraint systems in a vehicle is crucial in mitigating the risk of injury and fatalities among children in the event of a car crash (1).

Child restraint systems are specifically developed to cater to the developmental needs of children. These systems, much like seat-belts, secure the child within the vehicle and distribute the forces of an impact over a wide body area, thus reducing the risk of serious injury. There are three child restraint systems: rear-facing restraints for infants, forward-facing child restraints, and booster cushions or booster seats for older children (2). The use of car seats and booster seats is vital because children's bodies are not yet fully developed, and they lack the physical strength and maturity to withstand the forces of a car crash (2,3).

Motor vehicle crashes are a leading cause of death and injury for children worldwide (3). Data shows that 21% of road traffic deaths were among children. The road traffic death rate among children is 10.7 per 100 000 population (3-5). Research indicates that utilizing child restraint systems, such as car seats or booster seats, significantly decreases the likelihood of fatal injury in motor vehicle accidents (2-5). For instance, the use of child safety seats has been demonstrated to reduce the risk of fatalities among infants by 71% and among toddlers aged 1 to 4 years by 54% in passenger vehicles.. Additionally, the utilization of booster seats has been found to reduce the risk of serious injury by 45% among children aged 4 to 8 years compared to solely utilizing seat belts. Despite these findings, it has been observed that more than half of all child restraint systems are either not utilized or installed improperly (4-9).

Research Article

Received 12-02-2023

Accepted 20-02-2023

Available Online: 21-02-2023

Published 28-02-2023

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In order to avert vehicular mishaps among children, it is essential to adequately fasten them in car seats or booster seats suitable for their age, mass, and stature. The National Highway Traffic Safety Administration (NHTSA) in the United States furnishes directives and suggestions regarding car seat safety, along with particulars on the safety ratings of distinct car seats (10). Additionally, certain medical institutions provide guidelines and recommendations for car seat safety that are grounded on current research and medical expertise (11). Healthcare professionals play a pivotal function in endorsing child passenger safety and car seat safety (12). This investigation aimed to assess parents' knowledge and attitudes regarding car seat safety.

MATERIAL and METHODS

Sample and Population: The study was carried out between December 1st and January 15th, 2023, among a population of parents who sought healthcare services at Ataturk Family Health Center and Cam & Sakura City Hospital in Istanbul, Turkey. The descriptive analysis was conducted on individuals aged 18-65 who acted as caregivers for offspring between the ages of 0-18 years old.

Data Collection: Data was collected through a questionnaire developed by the researchers based on the literature (9), which included 31 questions on the parents' knowledge and opinions on the use of car seats.

Ethics: Ethical approval for the study was obtained from Institutional Ethics Committee of Istanbul Medipol University, Istanbul (Date: 24/11/2022, No: 1014). The parents were informed of the purpose and method of the study and their cooperation was obtained. After these explanations, parents who agreed to participate in the research were asked to sign an informed consent form. Personal identifying information such as names, addresses and phone numbers were not included in the survey given to the families.

Statistical Analysis: SPSS (Statistical Package for Social Sciences) 26.0 for Windows was used for statistical analysis of the data. The evaluation of the data included a calculation of frequency and a determination of the percentage distribution. Pearson's Chi-Square test was conducted to investigate the relationship between parents' education level and the presence of a child car seat in the vehicle. Results were evaluated at a 95% confidence interval, and the $p < 0.05$ value was considered statistically significant in comparisons.

RESULTS

Four hundred individuals participated in the study. **Table 1** demonstrates descriptive statistics of the sociodemographic characteristics of the participants. In the study, 47% (190 individuals) of the participants reported having a female child, and 52% (210 individuals) reported having a male child. The mean age of the children was 6.88 ± 5.42 . The mean age of the mothers who were enrolled in the study was 37.19 ± 6.99 years, and 41% of them had completed their tertiary education. Similarly, the mean age of the fathers who participated in the survey was 40.49 ± 7.03 years, and 40% of them had completed their higher education.

Table 1. Descriptive statistics of sociodemographic characteristics of the participants.

	n	%
Child's Gender		
Female	190	47.5
Male	210	52.5
Mother's Education		
Elementary	141	35.3
High School	85	21.3
University	163	40.8
Illiterate	11	2.8
Mother's Occupation		
Housewife	201	50.3
Teacher	34	8.5
Nurse	18	4.5
Doctor	14	3.5
Other	133	33.3
Father's Education		
Elementary	136	34.0
High School	103	25.8
University	160	40.0
Illiterate	1	0.3
Father's Occupation		
Worker	50	12.5
Textile	45	11.3
Tradesperson	22	5.5
Freelance	15	3.8
Driver	15	3.8
Other	147	63.3

n: number, %: percentage

Table 2 demonstrates the child car seat status of the participants. In the study, 29% of the participants had a child car seat in their vehicle. In the study, 69% of the participants reported that their child did not sit in a car seat during travel, 28% reported that their child did sit in a car seat during travel, and 2% reported that their child sometimes sat in a car seat during travel. 48% of the participants reported that their child never traveled in a car seat, while 39% reported that their child traveled in a car seat before the age of 1. Of all the participants, 16% reported that their child continued to travel in a car seat: 4% reported up to 1 year, 5% reported up to 2 years, 6% reported up to 4 years, and the majority (12%) reported that their child traveled in a car seat up to 12 years old. Furthermore, 30% of the participants reported that they changed the car seat according to the age of the child, with 10% of those who changed the car seat doing so when the child was 6 months old, 32% when the child was 1 year old, and 19% when the child was 2 years old. Among the participants, 22% reported that they used the car seat facing backward for 2 months, 13% reported 6 months and 43% reported 1 year. **Table 3** demonstrates parents' knowledge of traffic and car seat safety. In the study, 88% of the participants had not previously experienced a traffic accident, 68% of the parents did not have a traffic violation. Of all the participants, 89% did not receive training on safe vehicle use, and 80% did not receive information or training on the use of car seats for children. Among those who did receive information, 30% reported obtaining it from television, 27% from the internet, 8% from books, 5% from seminars, and 10% from friends or neighbors. Among the participants, 94% reported that they wanted information on safe car seat use for children from physicians.

Table 2. Child car seat status.

	n	%
Presence of Child Car Seat in Vehicle		
Yes	118	29.5
No	282	70.5
Child's Car Seat Usage Status		
Yes	114	28.5
No	276	69.0
Sometimes	10	2.5
Child's First Car Seat Use Age		
0-1 year	155	38.8
1 year	27	6.8
2 years	23	5.8
4 years	2	0.5
Never	193	48.3
Child's Most Recent Car Seat Use Age		
Continuing	65	16.3
1 year	17	4.3
2 years	21	5.3
3 years	16	4.0
4 years	24	6.0
5 years	22	5.5
6 years	17	4.3
7 years	13	3.3
8-12 years	12	3.0
Never	193	48.3
Change of Car Seat Based on Child's Age		
Yes	119	29.8
No	281	70.3
Child's Car Seat Change Age (n=106)		
6 months	11	10.4
1 year	34	32.1
2 years	20	18.9
3 year	18	17.0
4 years	13	12.3
5 years and older	10	9.4
Child's Rear-Facing Car Seat Use Duration		
2 months	34	21.9
3 months	11	7.1
4 months	3	1.9
5 months	5	3.2
6 months	21	13.5
7 months	6	3.9
8 months	2	1.3
9 months	6	3.9
1 year	66	43.2

Table 3: Parents' knowledge on traffic and car seat safety.

	n	%
Family's History of Traffic Accidents		
Yes	47	11.8
No	353	88.3
Mother or Father's History of Traffic Violations		
Yes	127	31.8
No	273	68.3
Mother or Father's Safe Vehicle Operation Training		
Yes	43	10.8
No	357	89.3
Mother or Father's Car Seat Safety Training		
Yes	81	20.3
No	319	79.8
Source of Information on Car Seat Safety		
TV	119	29.8
Internet	107	26.8
Book	31	7.8
Seminar	20	5.0
Friend/Neighbor	41	10.3
Receiving Car Seat Safety Information from a physician		
Yes	23	5.8
No	377	94.3
Desire to Discuss Car Seat Safety with a Physician		
Yes	288	72.0
No	112	28.0

n: number, %: percentage

Table 4 demonstrates parents' education level and presence of a child car seat in the vehicle. A statistically significant difference was found between the parents' level of education and the presence of a child car seat in the vehicle ($p<0.001$).

Table 4. Parents' education level and presence of a child car seat in the vehicle.

	Child Car Seat Presence in the Vehicle		p*
	Yes n (%)	No n (%)	
Mother's Education Level			
Primary School	6 (5.1)	135 (47.9)	p<0.001
High School	23 (19.5)	62 (22.0)	
University	89 (75.4)	74 (26.2)	
Illiterate	0 (0.0)	11 (2.8)	
Father's Education Level			
Primary School	7 (5.9)	129 (45.7)	p<0.001
High School	27 (22.9)	76 (27.0)	
University	84 (71.2)	76 (27.0)	
Illiterate	0 (0.0)	1 (0.3)	

* Pearson's Chi-Square test was conducted to investigate the relationship between the parents' driving license status and active vehicle use and a child car seat availability in the vehicle and the $p<0.05$ value was considered statistically significant in comparisons.

DISCUSSION

The current study's findings indicate that parents were unaware of the importance of car seat safety for their children. Only 29% of the participants had a car seat in their vehicle, and 69% reported that they did not put their child in a car seat while traveling, indicates that parents are not taking the necessary steps to ensure the safety of their children while traveling. Additionally, 48% of the participants stated that their children have never traveled in a car seat, and 70% did not change car seats as the age of their children changed. This indicates that parents were not taking the necessary precautions to ensure their children travel in the correct car seat for their age and weight.

Moreover, the study found that only 30% of the participants received information/training on the use of car seats in children from television, and only 8% received information about safe car seat use in children from their physicians. This indicates that there is a lack of information about car seat safety for children, and that parents are not receiving the necessary information and training to ensure their children's safety while traveling.

It is worth noting that our study aligns with the previous study in Turkey by Kurtuncu et al.(13) which also found that the use of car safety seats among children surveyed was found to be related to the education level of the parents. Additionally, they found that as the number of children in a family increase, the use of car safety seats decreases. And also, a majority of the parents obtained information about car safety seats from friends and television, and a majority of the parents believed that the direction the child faced in the seat was not important.

In China, the study by Niu et al. (14) found an increased awareness and compliance with the use of child safety seats among parents after the mandatory legislation in Shanghai, but also gaps in awareness and use of child safety seats among taxi drivers. The study by Liu et al. (15) in Shenzhen municipality found that most parents had a positive attitude towards the use of child safety restraint systems.

In South Korea, both studies by Kim et al. (16) and Yoon et al., (17) found parents' correct use of child safety seats and child occupant restraints was low. Both studies also found that parental education and awareness about the importance and necessity of child safety seats is a significant factor in determining whether parents choose to use them.

A study conducted by Ang et al. (18) in Malaysia revealed that although the majority of parents were aware of child restraint systems, only half of them provided one for their newborn. Additionally, more than half of the parents were not aware of possible child restraint system legislation in Malaysia, but the majority of them agreed with its implementation.

In Greece, the study by Krepis et al. (19) found that a majority of children were not properly restrained while being transported.

In a study in Pakistan, Chaudhry et al. (20) found that a significant proportion of participants were unaware of child car safety restraints, and those who knew commonly cited

reasons such as unavailability, time is taken in installation, and lack of laws as reasons for not using them.

In a survey by AlSallum et al. (21) in Saudi Arabia, they found that most participants were females within the age range of 25-35 years old. Although most of them comply with the seat-belt policy, the use of child car safety seats was relatively low, with a majority of parents not using them.

An observational study by Olufunlayo et al. (22) in Nigeria, showed a low proportion of child passengers aged 0-10 years properly restrained in cars. Additionally, a high percentage of these children were observed riding in the front seat, which is not recommended for safety reasons. While awareness of car safety seats among parents was high, knowledge of specific child passenger safety issues and practices was found to be inadequate. The most commonly cited reason for not using child restraints was unavailability.

In the United States, the study conducted by Lee et al. (23) to investigate the usage of child restraint systems and contributing factors among the youngest passengers from 2011 to 2015 showed that only 48% of the fatally injured children were appropriately restrained in a child restraint system. Additionally, the study found that premature transition to a booster seat and seat belt was evident, and that younger children were more likely to be in an appropriate child restraint system.

In Israel, Hemmo-Lotem, et al. (24) showed that there was a high rate of incorrect answers regarding injury prevention, with 64% of parents not knowing the proper car seats for age and 84% not knowing the age for booster seats. Additionally, 65% of parents did not know what a booster seat was and 54% did not know that the proper place for children was in the back seat. The average of incorrect answers was 4.86 out of 7, which was found to be correlated with low socioeconomic status. Furthermore, the study found that 60% of babies and 38% of toddlers were not restrained properly while travelling in car.

In a study by Souza et al. (25) in Brazil, showed that while 78.5% of cars were equipped with child restraint systems, only 58% of the devices were appropriate for the child's age and properly installed. Additionally, only 28.6% of parents knew that children should never be positioned in a seat with active airbags. These findings reveal a significant gap in parental knowledge and awareness regarding the correct use of child restraint systems and airbags for child safety in cars.

All of the studies we have provided have similar conclusions: there is a lack of knowledge and understanding among parents regarding the importance and proper use of child car seats. The studies also found that there is a lack of information and education provided to parents on this topic, and a correlation between parental education level and the presence of a child car seat in the vehicle. Additionally, many studies found that parents often do not change car seats as the age and weight of their children change, and that many do not comply with mandatory legislation on child car seat usage. The studies also found a gender gap when it comes to driving, and a low usage rate of proper car seats for children. Overall, these studies highlight the need for more education and awareness about the importance of proper child safety in vehicles.

CONCLUSION

Our study concludes that there is a lack of knowledge and understanding among the participants regarding safe vehicle use for children, particularly regarding the use of car seats. The majority of participants did not have a child car seat in their vehicle, and many reported that their child did not sit in a car seat during travel. Additionally, many participants did not receive information or training on the use of car seats for children, and most reported wanting more information from physicians.

The study's findings can be used by researchers and practitioners when developing education and interventions targeting child-parent dyads at the greatest risk for a motor-vehicle crash-related fatality. The study also found a correlation between parental education level and the presence of a car seat in the vehicle, with higher education levels being associated with a greater likelihood of having a car seat. Overall, the study highlights the need for more education and awareness about the importance of proper child safety in vehicles. Additionally, it is clear that more efforts are needed to ensure compliance with mandatory legislation and expand public awareness to improve child passenger safety practices and reduce the risk of injury from traffic collisions.

The survey results indicate that a substantial number of parents would like to receive further information from healthcare providers. Consequently, it is crucial that healthcare practitioners, with a particular emphasis on family physicians, are aware of this demand and take appropriate measures in response. Primary healthcare professionals play a critical role in promoting car seat safety for children within the scope of preventive healthcare. These professionals are often the first point of contact for families and serve as trusted sources of information and advice on child safety. They can educate parents and caregivers on the importance of using the appropriate car seat for their child's age, height, and weight, and demonstrate proper installation techniques. Additionally, they can offer guidance on when it is time to transition from one type of car seat to another and provide resources for finding affordable options. By working with families to ensure that children are properly secured in their car seats, primary healthcare professionals can help prevent injuries and save lives.

Acknowledgments: The authors would like to thank all participants who devoted their time in this study. We also sincerely acknowledge Dr. Nevin CAMBAZ KURT from Basaksehir Cam & Sakura Hospital, in Istanbul, Turkey for her helpful and wholehearted cooperation.

Conflict of interest: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Author Contributions: **ATA, AGA:** Concept, **ATA:** Literature Review, **AGA:** Design, **AGA:** Data acquisition, **ATA, AGA:** Analysis and interpretation, **ATA, AGA:** Writing manuscript, **ATA:** Critical revision of manuscript

Ethical approval: All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and/or with the Helsinki Declaration of 1964 and later versions. Informed consent or substitute for it was obtained from all patients for being included in the study. Written consent was obtained from each patient to use their hospital data. The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Ethics Committee of Istanbul Medipol University, Istanbul, Turkey (Date: 24/11/20, No: 1014).

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