Knowledge, Practice and Attitudes of Parents Toward child Car Seat Safety in Saudi Arabia

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ABSTRACT

Introduction: According to motor vehicle collisions reports, Saudi Arabia experiences about 19 fatalities and 4 injuries per day. There are many different options available for car seat safety (CSS). The best option is to use appropriate safety seats for children of age, which offer significantly more protection than the back seats.

Aim: To assess the knowledge, practice, and attitudes of children's car seat safety among parents in Saudi Arabia.

Methods: This observational cross-sectional study was conducted on April 2022 using an online self-administered questionnaire. Male and female parents with children under seven years old were included in the study. SPSS Version 23 was used for statistical analysis. Descriptive analysis in percentages and frequencies was used to present categorical variables. A significance value, $p < 0.05$, was considered statistically significant.

Results: Three thousand forty-one parents from different regions of Saudi Arabia participated in the study. The age range of parents was 20-50 years old. About one-half of participants (50.6%) always use the car seat for their child, and 15.9% of them sometimes use a car seat; however, 33.5% of parents don't use the car seat for their child. The most common reason for using the car seat was to ensure the protection of their child (99.4%). On the other hand, 1019 parents (33.5%) don't use the car seat for their child for different reasons including; my child's resistance to sitting in the car seat (57.3%), there is not enough space for a car seat inside the vehicle (48.1%), or car seats' prices are high (40.1%). About half (52.6%) of parents believed that a child car seat should be used from birth. The majority of parents (83.9%) agreed that using the car seat for the child helps to focus more on driving. Most of parent did not think that using a seat belt for the child replaces a child seat (73.4%) or their lap is safer than a car seat during accidents (77%). 59.6% of parents were supporters of the fines system for not securing a car seat for children. Age, education, family members, and region were significant factors ($P<0.001$) affecting the behavior regarding the seat belt, but income was not a significant factor ($P=0.019$).

Conclusion: This study demonstrated that Saudi parents lack the required knowledge, attitude, and practices toward children's car seat safety. This highlights the necessity for parents to raise their knowledge to keep their children safe when driving.

INTRODUCTION

Road traffic accidents are a serious public health concern. [1-3] Road traffic accidents are the primary cause of accidental injury, accounting for most pediatric fatalities. [4] Compared to seat belts, child car safety has been shown to reduce the risk of injury by up to 82% and the risk of death by 28%. [5] The American Academy of Pediatrics has issued evidence-based recommendations for CCRs, including that all children under 13 ride in the backseat. Other recommendations include using booster seats for children up to eight years old, forward-facing restraints for children up to four years old, and seatbelts for children who outgrow them. [6]

According to motor vehicle collisions (MVCs) reports, Saudi Arabia experiences about 19 fatalities and 4 injuries per day. Still, these incidents only make up 1%–1.9% of all fatalities annually, comparable to the United Kingdom (UK) or the United States of America (USA). [7] The number of deaths per 100,000 people in Saudi Arabia was 26 in 2015, compared to 3 and 11 in the UK and the USA, respectively. This figure is alarming and

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has steadily increased since 2014. [8, 9] It is reported that 13.5% of MVCs involved children in the car, even though there is no conclusive data on the child mortality rate due to MVCs, and it has not yet been calculated. [3, 10]

There are many different options available for car seat safety (CSS). The best option is to use appropriate safety seats for your age, which offer significantly more protection than the back seats. However, the best injury prevention in MVC is made possible by safety seats installed in the backseat. [11] Using an inappropriate model doubles the risk of injury, while CSS effectively reduces fatality by up to 71%. [12] Rear-facing car seats (RFCS) is 93% effective at preventing injury, while forward-facing car seats (FFCS) are less effective, with a paltry 78% effectiveness, according to research published in 2018 comparing the injury risk between RFCS and FFCS car seats for children under two years of age in the USA. [13]

Researchers worldwide are beginning to realize how crucial parental attitudes and knowledge are to determining CCS compliance. Numerous studies have been conducted in Asia, North and South America, Europe, the Middle East, and Africa that are both qualitative and cross-sectional. [14, 15] These studies discovered numerous factors contributing to parental resistance to CCS use. The importance of CCS in the event of a collision [14, 15] and practical barriers, such as dealing with challenging behavior when the child refuses to remain in the car safety [12] and the prohibitive cost of the car restraint, were all mentioned as potential causes. [16, 17]

Unfortunately, limited research has been done in Saudi Arabia to ensure the safety of young passengers. This field of research needs enforcement to limit the safety of the measures, particularly for children. As MVCs are regarded as one of the leading causes of child fatalities worldwide [8, the American Academy of Pediatrics (AAP) applauds the inclusion of the child's safety as a passenger during each visit. Using car seats properly is one of the most crucial restraint measures for kids traveling. It has been shown to reduce fatal injuries by 71%–90% in infants younger than one-year-old and by 54% in kids between one and four years old. [11] In this study, we aimed to assess the knowledge, practice, and attitudes of children's car seat safety among parents in Saudi Arabia.

Aim of work:

This study aims to assess the knowledge, practice, and attitudes toward children's car seat safety among parents in Saudi Arabia and to implement educational and awareness programs about children's car seat safety. In addition, the present study seeks to determine the parents' level of education, socioeconomic status, and other factors affecting their attitudes regarding car seat safety.

METHODS

This observational cross-sectional study investigated Saudi parents' knowledge, practice, and attitudes regarding child car seat safety. The study was conducted on April 2022 using an online self-administered questionnaire (in Google Forms). Male and female parents aged above 18 years, with children under seven years old, who willingly approved to participate, were included in the study. Parents not possessing a car or having children more than seven years of age were excluded.

The questionnaire consisted of 24 items divided into three parts. The first part included participants' demographic data, and it was composed of 12 questions. The second part had eight questions that measured the awareness and knowledge of participants regarding CSS, and the third part of hard items that measured the attitude and the causes that hinder compliance with car safety seat laws.

Data analysis:

Data collected were tabulated and transferred to MS Excel sheets. An independent biostatistician using the SPSS Version 23 performed the statistical analysis. Descriptive analysis in percentages and frequencies was used to present categorical variables. Tests of normality were performed to check the normal distribution of continuous variables. The Pearson Chi-square test analyzed any possible statistical relationship between categorical variables. A significance value, $p < 0.05$, was considered statistically significant.

Ethical consideration:

This study was approved by the International Review Board (IBR). Participants' data were kept anonymous. The study objectives were briefly explained to all the participants.

RESULTS

Table 1. Sociodemographic variables of study participants

		Frequency	Percent
Age	Less than 20 years old	125	4.1
	20 to 30 years	1035	34.0
	31 to 40 years	895	29.4
	41 to 50 years	693	22.8
	over 50 years old	293	9.6
Region	Central Region	444	14.6
	Eastern Region	1091	35.9
	Western Region	537	17.7
	Northern Region	589	19.4
	Southern Region	380	12.5
Education	Primary education	65	2.1
	High school education	669	22.0
	University	2010	66.1
	Postgraduate	297	9.8
Income	<5000	429	14.1
	5000-9000	916	30.1
	10000-15000	1019	33.5
	Ø 15000	677	22.3
Family member	< 3	514	16.9

3-5	1578	51.9
6-8	802	26.4
>=9	147	4.8
- Do you use a car seat for your child?		
	Frequency	Percent
Yes	1540	50.6
No	1019	33.5
Sometimes	482	15.9
Total	3041	100.0

Table 1 shows the socio-demographic variables of study participants. Three thousand forty-one parents from different regions of Saudi Arabia participated in the study. The age range of parents was 20-50 years old. The parents had different education levels. However, most of them had a university education (66.1%). About one-half of participants (50.6%) always use a car seat for their child, and 15.9% sometimes use a car seat. However, 33.5% of parents don't use the car seat for their child.

Table 2. The parents' beliefs of the car seat for the child.

	N=1540	%
8- If your answer is yes, what is the reason for using the car seat? You can choose more than one option		
After attending awareness campaign	270	17.5
previous painful experience	95	6.2
To avoid violations	557	32.2
To ensure the protection of your child	1530	99.4
9- If your answer is no, why don't you use the car seat? You can choose more than one option n= 1019		
Car seats' prices are high	409	40.1
I don't believe in its importance	210	20.6
My child's resistance to sitting in the car seat	584	57.3
There are no car seat violations in my area	154	15.1
There is not enough space for a car seat inside the vehicle	490	48.1
You can choose more than one option		

Table 2 shows the parents' beliefs about the car seat for the child. About one-half of participants (n= 1540, 50.6%) always use the car seat for their child for different reasons. The most common reason was to ensure the protection of their child (99.4%), then to avoid violations (32.2%), or after attending an awareness campaign (17.5%), or previous painful experiences (6.2%).

On the other hand, 1019 parents (33.5%) parents don't use the car seat for their child for different reasons, including; my child's resistance to sitting in the car seat (57.3%), there is not enough space for a car seat inside the vehicle (48.1%), car seats' prices are high (40.1%), they don't believe in its importance (20.6%), or there are no car seat violations in my area (15.1%).

Table 3. Attitudes and opinions of parents toward the car child seat

	n	%
In your opinion, when should a child car seat be used?		
Birth	1599	52.6
from birth to 10 years	307	10.1
1-3 years	928	30.5
3-6 years	188	6.2
school age	19	.6
What is the appropriate place to put a child seat in the car?		
front seat	58	1.9
Back seat in the middle	861	28.3
Rear seat left or right	1777	58.4
All places are suitable	345	11.3
The direction of the car seat for children under one year, must be:		
Forward	961	31.6
Backward	1556	51.2
no difference	524	17.2
The direction of the car seat for children more one year, must be		
Forward	2136	70.2
Backward	276	9.1
no difference	629	20.7
Using a car seat for my child helps me focus more on driving:		
Agree	2552	83.9
dont agree	172	5.7
not sure	317	10.4
Do you think that using a seat belt for your child replaces a child seat?		
Yes	421	13.8
No	2233	73.4
don't know	387	12.7
- Do you think your lap is safer than a car seat during accidents		
Yes	336	11.0
No	2343	77.0
Yes	336	11.0
Are you a supporter of the fines system for not securing a car seat for children?		
Yes	1811	59.6
No	741	24.4
don't know	489	16.1
Do you support that the car seat is a mandatory condition when receiving a newborn?		
Yes	1418	46.6
No	1138	37.4
don't know	485	15.9

Table 3 shows the attitudes and opinions of parents toward the car child seat. About half (52.6%) of parents believed a child's car seat should be used from birth. The appropriate place to put a child's seat in the car was the rear seat left or right in 58.4% of parents. About one-half of parents (51.2%) believed that the direction of the car seat for children under one year must be backward, while most of them (70.2%) believed that the direction of the car seat for children more than one year must be forward. Most parents (83.9%) agreed that using the car seat for the child helps to focus more on driving. Most parents did not think using a seat belt for the child replaces a child seat (73.4%) or their lap is safer than a car seat during accidents (77%). 59.6% of parents were supporters of the fines system for not securing a car seat for children. The car seat is a mandatory condition when receiving a newborn was an opinion of 46.6% of parents.

Table 4. Relation of seat belt use with demographic factors

			seatbelt use			P value
			Yes	No	Sometimes	
Age	Less than 20 years old	n	57	49	19	<0.001
		%	3.7%	4.8%	3.9%	
	20 to 30 years	n	610	269	156	
		%	39.6%	26.4%	32.4%	
	31 to 40 years	n	450	295	150	
		%	29.2%	28.9%	31.1%	
	41 to 50 years	n	274	300	119	
		%	17.8%	29.4%	24.7%	
	over 50 years old	n	149	106	38	
		%	9.7%	10.4%	7.9%	
qualification	Primary education	n	25	31	9	<0.001
		%	1.6%	3.0%	1.9%	
	High school education	n	287	271	111	
		%	18.6%	26.6%	23.0%	
	University	n	1038	655	317	
		%	67.4%	64.3%	65.8%	
	Postgraduate	n	190	62	45	
		%	12.3%	6.1%	9.3%	
income	<5000	n	189	169	71	0.019
		%	12.3%	16.6%	14.7%	
	5000-10000	n	469	298	149	
		%	30.5%	29.2%	30.9%	
	10000-15000	n	508	342	169	
		%	33.0%	33.6%	35.1%	
	>15000	n	374	210	93	
		%	24.3%	20.6%	19.3%	
Family member	< 3	n	328	109	77	<0.001
		%	21.3%	10.7%	16.0%	
	3-6	n	871	451	256	
		%	56.6%	44.3%	53.1%	
	6-8	n	299	378	125	
		%	19.4%	37.1%	25.9%	
	>=9	n	42	81	24	
		%	2.7%	7.9%	5.0%	
region	Central Region	n	235	118	91	<0.001
		%	15.3%	11.6%	18.9%	
	Eastern Region Region	n	583	351	157	
		%	37.9%	34.4%	32.6%	
	Western Region	n	284	180	73	
		%	18.4%	17.7%	15.1%	
	North n Region	n	263	224	102	
		%	17.1%	22.0%	21.2%	
	south Region	n	175	146	59	
		%	11.4%	14.3%	12.2%	

Table 4 shows the relation of seat belt use with the demographic factors of parents. Parents' age, education, family members, and region were significant factors (P<0.001) affecting the use of seat belts among the study participants. However, participants' income was not a significant factor (P=0.019).

DISCUSSION

Comparing and contrasting the findings of various qualitative and cross-sectional studies exploring parental knowledge of and attitudes towards CCS use worldwide suggested an overlap between parental views in different countries. Regarding perceived barriers or reasons cited for non-compliance, common themes were identified across studies in high-income countries, as classified by per capita gross national income. These mainly centered around lack of parental knowledge (e.g., believing that the CCS is unnecessary) and problematic child behavior (e.g., refusal to stay in the car restraint). [18] In upper-middle- and lower-middle-income countries, common themes also included the cost of obtaining a CCS as a barrier and lack of knowledge and difficult child behavior. [19]

Three thousand forty-one parents from different regions of Saudi Arabia participated in this study. The age range of parents was 20-50 years old. About one-half of participants (50.6%) always use the car seat for their child, and 15.9% sometimes use a car seat; however, 33.5% of parents don't use the car seat for their child. The most common reason for using the car seat was to ensure the protection of their child (99.4%). On the other hand, 1019 parents (33.5%) don't use the car seat for their child for different reasons, including; my child's resistance to sitting in the car seat (57.3%), there is not enough space for a car seat inside the vehicle (48.1%), or car seats' prices are high (40.1%). About half (52.6%) of parents believed a child's car seat should be used from birth. Most parents (83.9%) agreed that using the car seat for the child helps to focus more on driving. Most parents did not think using a seat belt for the child replaces a child seat (73.4%), or their lap is safer than a car seat during accidents (77%). 59.6% of parents were supporters of the fines system for not securing a car seat for children. Age, education, family members, and region were significant factors (P<0.001) affecting the behavior regarding the seat belt, but income was not an essential factor (P=0.019).

A study conducted in the city of Unaizah, Saudi Arabia, reported a prevalence of 56.7% of seat belt usage among parents for their children. [20] It also demonstrated that the overall knowledge, attitude, and practices toward children's car safety seats in this study were relatively low. [20] Bingham et al. stated that, in China, the frequent reasons for not using a safety seat were "difficulties in finding safety seat followed by the cost." [21] Although the causes were different from the perspective point of view, this might be attributed according to the perception of each country about their opinion on how they can protect their child when riding in a car.

Studies have demonstrated that using seat belts for children is not as effective as for adults and that a child's body is too small to be protected by the seat belt. [22] Injuries resulting from MVC are the leading cause of death in children, after only infectious diseases. [23] A study conducted in Kuwait reported that 44% had seated a child in the front seat, and less than half of the participants had seated a child in their lap while driving. [24]. A study conducted in neighboring countries to Saudi Arabia, such as the United Arab Emirates and Kuwait, found that the prevalence of children in front seats is not uncommon. [25] Another study in the Republic of China found that 31.1% of

parents agreed that their child would frequently use the vehicle's front seat when traveling. [26]
In addition, another Saudi study showed that some of the reasons for not using seat belts include lack of information about the importance of CSS, high cost of CSS, lack of strict law in using CSS, etc. [27] A similar study conducted in China found the reasons for not using a CSS included difficulty finding a good product, high cost, the problem of using, and also a belief that it is unnecessary. [26] The reason for the lack of information among parents regarding the use of safety restraints for their children may be because of the need for more awareness of the guidelines for the benefit of CSS according to the traffic rules of Saudi Arabia. [28]

A study published by Biagioli elaborated that the back seat is the best place for an infant (rear facing). Facing the rear minimizes head and neck injury risk in a crash. In a frontal crash, the back of the safety seat supports the child's head and neck. He further emphasized that the harness restrains the body if an infant is facing forward. Still, the head and neck remain unrestrained and whip forward in rapid flexion, potentially causing injury. [29] In connection with this, one study results revealed that 64.4% of participants observed placing the child in the back seat while driving, and on the other hand, 69 of them put the child in the front seat. Pan et al. reported that 83.1% of parents from China allowed their children to sit separately in the rear seat. [30]

CONCLUSION

This study demonstrated that Saudi parents lack the required knowledge, attitude, and practices toward children's car seat safety. This highlights the necessity for parents to raise their knowledge to keep their children safe when driving. Current safety recommendations suggest that infants and toddlers should ride in a rear-facing seat until they reach a suitable height and weight indicated by the car manufacturer. For Infants and toddlers, the type of CSS that should be used is a rear-facing or a convertible rear-facing one. But for toddlers and preschoolers, a forward-facing convertible or forward-facing with harness type of seat is recommended. The use of CSS helps in the prevention of the child from ejection from the vehicle by spreading the forces of the crash to the most vital part of the body. Educational and awareness programs should be directed to parents to educate them about the benefits of car seat safety and the hazards of not implementing it.

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