

Parents' Use of Child Protection Systems and Their Practices on Related Factors

Ebeveynlerin Çocuk Koruma Sistemleri Kullanımı ve İlgili Faktörler Konusundaki Uygulamaları

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Summary

Objectives: Aim of the study is to determine the factors affecting the use of child restraint system (CRS) by the families whose children were observed in well-child clinic.

Material and Method: This study was performed by well-child clinic in Ankara.

Results: Overall, 1201 parents of 1859 children under 18 years old with a median age of 48 months were assessed. Of the people surveyed, 69% of the children were unrestrained, only a 23.2% were properly restrained while traveling. The rate of being appropriately restrained was higher in the age group of 0-2 years and the lowest in the age group of 9-12 years. Among the children sitting in the front seat, 77.6% were under 13 years old and 6.1% were seated inappropriately in front seats, and the rate of seat belt misuse was 7.8%. Mothers having a university degree, fathers being healthcare professionals, mothers wearing the seat belt regularly or having a single child and the enforcement of CRS obligatory law were found to be effective in using the CRS.

Conclusion: This study exhibited that an overwhelming majority of parents does not utilize proper CRS. Despite the enactment and adaptation of CRS obligation law, the parents' public compliance is not sufficient for any level.

Key words: Child, child restraint system, parents.

Özet

Amaç: Bu çalışmanın amacı, sağlam çocuk kliniğinde takip edilen çocukların ailelerinin çocuk koruma sistemleri (ÇKS) kullanımını etkileyen faktörleri belirlemektir.

Gereç ve Yöntem: Çalışma Ankara'daki bir sağlam çocuk kliniğinde yapıldı.

Bulgular: Toplamda, ortalama yaşı 48 ay olan 18 yaş altı 1859 çocuğun 1201 ebeveyni değerlendirildi. Ankete katılanların çocuklarının %69'u koruma sistemi olmaksızın seyahat ederken, sadece % 23,2'sinde uygun koruma kullanılmıştı. Uygun şekilde korunma sistemi kullanım oranı 0-2 yaş grubunda daha yüksek ve 9-12 yaş grubunda en düşük düzeyde bulundu. Ön koltukta oturan çocukların %77,6'sı 13 yaşın altındaydı ve %6,1'i ön koltuklarda uygunsuz şekilde oturuyorlardı; emniyet kemeri yanlış kullanma oranı %7,8 idi. Üniversite mezunu anneler, sağlık profesyoneli olan babalar, emniyet kemerini düzenli kullanan ya da tek çocuğu olan annelerin ve zorunlu ÇKS kanunu uygulanmasının ÇKS kullanımında etkili olduğu bulunmuştur. **Sonuç:** Bu çalışma, ebeveynlerin büyük bir çoğunluğunun uygun ÇKS kullanmadığını göstermiştir. ÇKS yükümlülük yasasının yürürlüğe girmesi ve uygulanmasına rağmen, ebeveynlerin kamuya uyumu yeterli seviyede değildir.

Anahtar kelimeler: Çocuk, çocuk koruma sistemleri, ebeveynler.

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Introduction

Unrestrained children in a vehicle are at increased risk of injury and death in the event of an accident (1,2). Using appropriate child restraint system (CRS) reduces the possibility

of a severe injury of children (2,3). Seating position also has been associated with the injury risk besides restraint use (1,2,4,5). Sitting in the front seat has been directly related to a 40%-60% increased risk of injury among infants and toddlers (4,5).

The 'American Academy of Pediatrics' (AAP) policy statement made five evidence-based recommendations of best practices of obligatory use of an approved CRS (6). The obligation to use a proper car restraint has been specified in legislations in numerous countries. More than 90% of high-income countries have child restraint legislations whereas this rate is only 20% in low-income countries. According to the law enacted in June 2010, it is mandatory to use CRS when a child under 12 years old is traveling in any vehicle in Turkey (7). For the countries where the compliance of CRS usage is already low, the source of the conundrum needs to be investigated.

Aim of the study is to determine the factors affecting the use of CRS by the families from medium-high sociocultural level whose children were observed in the well-child clinic at a university hospital.

Material and Method

This study was performed by the well-child clinic at Gazi University School of Medicine in Ankara, during January 2005-January 2007 (period before the CSR law) and January 2011-July 2011 (six months after the law was enforced). During the study; the families owning a car were interviewed in person and were asked if they regularly use suitable child and personal safety restraints. The "age appropriate restraint system" definitions were established according to the AAP guidelines and our national CRS obligatory law. Child seats for children under four years of age and child seats or booster seats for children between 4-12 mounted on the back seat, and lap-and-shoulder seat belts for children over 12 years in the rear or front seats of vehicles have been accepted to be "age relevant restraint system" (6,7,8).

Since the CRS law does not have provisions to educate parents to how install the restraints systems in Turkey, the questions about proper installation of devices facing forward were not asked.

The expression "unrestraint" defined using none of the CRS, "misuse of seat belt" defined being strained by lap-and-shoulder seat belts in front or rear seats for younger than 13 years old and

"inappropriately front seat" defined as sitting in front seats for children under 13 years old. The local ethics committee has approved the study.

The statistical analyses were made using the "Statistical Package for Social Sciences version 15.0 (SPSS/PC) program." The continuous variables were expressed as mean±standard deviation, minimum and maximum values, categorical variables were expressed as percent. Those variables were compared using chi-square test. The variables with the p-value of <0.1 in a bivariate analysis were entered into a logistic regression analysis (Backward stepwise) to evaluate the effect of variables on a CRS. The results were evaluated in 95% confidence interval, significance being considered when p value was <0.05.

Results

Overall 1201 parents of 1859 children under the age of eighteen with a median age of 48 months were surveyed in the study. Nine hundred and fifty seven (51.5%) of the children were male, while 902 (48.5%) were female.

Average age of the mothers was 32.6±5.8, whereas 36.0±6.0 years of the fathers. Parents were well educated with a university degree (mothers and fathers; 65.4%, and 74.9% respectively). Of the households 33.6% (n:624) had a single child, and 58.5% with a medium to high (>1400\$/month) income.

Seating position and restraint usage of the children according to age groups are shown on table 1 (Table 1).

Of the people surveyed, 69% of their children were unrestrained, whereas only 3.2% were properly restrained while traveling in a vehicle. The rate of being appropriately restrained was higher in the age group of 0-2 years old and the lowest in the age group of 9-12 years old. While booster usage 1.0% (n:15), the age-appropriate usage of it was 80.0% (n:12). Among the children sitting in the front-seat (n:147), 77.6% (n:114) were under 13 years old. In the whole group sitting inappropriately in the front seat was 6.1% (n:114) whereas misuse of seat belt was at 7.8% (n:145). Table 2 demonstrates factors affecting CRS use (Table 2).

Table 1. Seating position and child restraint system (CRS) usage of the children according to age groups

Seating position and restraint usage of the children	0-2 year old	3-8 year old	9-12 year old	13-18 year old	Total**
	n % 738 (39.7)*	n % 679 (36.5)*	n % 280 (15.1)*	n % 162 (8.7)*	n % 1859 (100.0%)*
In the front seat without seat belt (lap or sitting)	47 41.2* 6.4**	45 39.5* 6.6**	8 7.0* 2.9**	14 12.3* 8.6**	114 (6.1)
In the front seat with seat belt	1 3.0* 0.1**	3 9.1* 0.4**	10 30.3* 3.6**	19 57.6* 11.7**	33 (1.8)
In the back seat without seat belt (lap or sitting)	451 38.6* 61.1**	406 34.7* 59.8**	209 17.9* 74.6**	103 8.8* 63.6**	1169 (62.9)
In the back seat with seat belt	10 6.4* 1.4**	79 50.3* 11.6**	42 26.8* 15.0**	26 16.6* 16.0**	157 (8.4)
Child safety seat or booster seat	229 59.3* 31.0**	146 37.8* 21.5**	11 2.8* 3.9**	-	386 (20.8)
Age appropriate usage of CRS	229 (31.0)	146 (21.5)	11 (3.9)	45 (27.8)	431 (23.2)

*row % **column %

Using personal seat belt regularly was observed more often in mothers than fathers ($p=0.001$).

The following factors were positively impacting the utilization of age appropriate CRS on bivariate analysis; “the implementation of the CRS mandatory law and the period subsequently”, “parents having university degrees”, “higher monthly income”, “being the healthcare professions”, “parents wearing seat belt habitually” and “having a single child” were put on regression analysis. “The mothers having university degrees”, “fathers being the healthcare professionals”, “the mothers wearing seat belt regularly”, “having single child” and “the enforcement of CRS obligatory law and the period thereafter” were also found to be affecting the use of CRS (Table 3).

Discussion

One of the modes of preventing childhood fatal car accidents, could be to have the children properly restrained in a vehicle. Despite the

advantages of CRS in protection, many studies depicts poor rate of CRS use for children while in a vehicle (4,9,10,11,12). The studies concluded that the rate of CRS use is affected by enforcement of CRS obligatory laws, the socio-economical and cultural divisions as well.

In high-income countries even if there is a variation in the usage, it is still above the 60% (2,9,11,12). Although in Japan, the seat belt usage ratio is higher as it is legally mandated. However, it has not reached the levels of other developed countries (10). Controversially, despite the lack of CRS laws in China’s the usage of CRS is at 64.8% (11).

The varying effects of legislation of CRS and the socio-economical-cultural divisions on the use of CRS make it essential to focus on numerous contributing factors negatively impacting factors and enhancing preventive measures. In this survey only the quarter of 1859 children between 0-18 years of age was travelling with an age appropriate CRS.

Table 2. Factors affecting child restraint system (CRS) use.

Factors	Safety restrained children n (%)	Unrestrained children n (%)	Total n (%)	p
Maternal Education (n=1201)				
Elementary	20 (15.6)	108 (84.4)	128 (10.7%)	0.000
High School	45 (15.6)	243 (84.4)	288 (24.0%)	
University	264 (33.6)*	521 (66.4)	785 (65.3%)	
Paternal education (n=1201)				
Elementary	8 (17.8)	37 (82.2)	45 (3.7%)	0.000
High School	42 (16.3)	215 (83.7)	257 (21.4%)	
University	279 (31.0)*	620 (69.0)	899 (74.9%)	
Mother's occupation (n=1201)				
Healthcare professional	89 (35.7)	160 (64.3)	173 (14.4%)	0.001
Other	240 (25.2)	712 (74.8)	1028 (85.6%)	
Father's occupation (n=1201)				
Healthcare professional	74 (43.4)	98 (56.6)	173 (14.4)	0.000
Other	254 (24.7)	774 (75.3)	1028 (85.6)	
Monthly income				
≤1400 \$	105 (21.3)	389 (78.7)	494 (41.5)	0.000
>1400 \$	223 (32.0)	474 (68.0)	697 (58.5)	
Mothers' wearing the seat belt (n=1201)				
Regularly	241 (38.0)	394 (62.0)	635 (66.9)	0.000
Nothing	57 (10.2)	257 (81.8)	314 (33.1)	
Fathers' wearing the seat belt (n=1201)				
Regularly	249 (35.0)	463 (65.0)	712 (59.9)	0.000
Nothing	77 (16.2)	399 (83.8)	476 (40.1)	
The enforcement of CRS obligatory law (n=1201)				
Before	225 (21.5)	760 (78.5)	985 (82.0)	0.000
After	105 (43.6)	111 (56.4)	216 (12.0)	
Number of children in the household (n=1859)				
Single	248 (39.7)	376 (60.3)	624 (33.6)	0.000
≥2	218 (17.7)	1017 (82.3)	1235 (66.4)	
Gender (n=1859)				
Boy	238 (24.9)	719 (75.1)	957 (51.5)	0.872
Girl	228 (25.3)	674 (74.7)	902 (48.5)	

#row percent ##column percent *statistically different group

Table 3. Factors affecting child restraint system (CRS) use on the last step of logistic regression analysis

Factors	Backward Logistic Regression Analysis		
	β	P	CI* 95%
Mothers having university degrees	2.11	0.000	1.44-3.10
Fathers being healthcare professionals	1.98	0.001	1.32-2.96
Mothers wearing the seat belt regularly	2.03	0.000	1.40-2.94
Enforcement of CRS obligatory law	3.22	0.000	2.24-4.64
Having a single child	4.54	0.000	3.23-6.37

*CI: Confidence interval

The compliance to CRS obligatory laws is one of the most effective tools to increase correct use of the protective devices (3,13). Research shows the effects of CRS obligatory laws in the decline of fatal traffic accidents, it does not only encourage people to use the CRS but also guide its proper usage (14,15). In a study of Zaza et al which was reviewing 25 different studies, have concluded that; the presence of CRS obligation law has increased usage by 13% and decreased fatal injury rate by 35% (16). Presented study indicates that legislation in the short term has resulted in an approximately two-fold increase in compliance, but it still remains unacceptably low. The rate of CRS use in Turkey was at 21.5%, before the enactment of CRS obligation law, and it has risen to 43.6% since the law is enforced. Lower rate of implementation and compliance six months after the enactment of the law is indicative of lack of knowledge of benefits the system provides. Some studies have shown that every two years, there is a "honeymoon phase" with a renewed interest and increase in CRS usage and in the following years a decline is noticed (16). To see the long-term effects, more studies should be performed. There must be extensive attention given to the effectiveness and continued implementation thereafter. The factors negatively affecting the lack of and or improper usage of CRS must be determined and mitigated.

The rate of people traveling in unrestrained positions was found to be in between 5%-63.5% in many developed countries (1,9,11,17), finding it to be at 69% in Turkey is an overwhelmingly striking.

In recent years, in countries where CRS are widely used, the reasons of incorrect use have been discussed more than the need of use (18,19,20). Essentially, the low CRS usage rate, even after the law was enforced could be due to unawareness of the hazards and or lack of awareness of the parents.

In the study group, the rate of being properly restrained was highest in the age group of 0-2 years old. Being properly restrained was lowest in the age group of 9-12 years old. It is could probably be due to lower (1.0%) booster seat usage among the study group. After 13 years of age sitting in proper position with the correct use of seat belts rate was found to be considerably increasing. Probably, the families who were not using CRS are trying to use the CRS up to a certain age, and then directly choosing the lap-and-shoulder seat belts in the

rear or front seats of their vehicle. Many other studies, exhibit that when children outgrow car safety seats, the parents move on to seat belts instead of booster seats immediately, as they think that the child has outgrown or too old to be using safety seats (11,18,21,22,23,24,25). The same mindset is also often found even in countries where CRS is widely used (9,26). Some parents voiced their concerns that booster seats may not provide adequate protection in the event of an accident. Henceforth, they preferred an adult seat belt.

One of the probable reasons for the lower rate of appropriate restraint usage is non-compliance to existing regulations pertaining to children in the front seat or misuse of seat belt. In countries with a higher percentage of CRS usage, the non-compliance is within the %-50.0% or at a higher range (17,19,23,24). In the presented study, sitting in front seat inappropriately and misuse of seat belt rate were approximately 8% as the most of the people was travelling in unrestraint position.

Besides the enacted laws, the factors affecting proper use of restrains were found to be such as; "The mothers having university degrees", "fathers being the healthcare professions", "the mothers wearing seat belt regularly", "having a single child". Similarly, in a study which was conducted with families having university degrees, the higher-education level of the mothers was found to be an independent factor on correct use of CRS. It was found that the mother having at least a bachelor's degree positively affected the proper CRS usage. One of the probable causes that the education levels effected safety seat usage could be that the parents had access to pertinent information; personal awareness of the hazards therein, and henceforth made better judgement calls (27,28,29,30).

The health-care professionals are usually the first responders and witness traffic accident resulting in death or injury more than others. We have concluded that, firsthand experience might have helped them in making better safety choices. Similarly, if the father was a health care professional, it helped him in better personal safety practices.

The use of restraint systems by parents has consistently been a strong predictor of child using a restraint system, as it reflects the parental desire of being a role model for their children (23,29,30,32). Similarly in many researches, it was found that women use seat

belts at a higher rate (33,34). It was also concluded that if the mother was wearing a seat belt regularly, then the child is two times more likely to accept a CRS. In America, 2880 children of ages between 4-8 years were surveyed. That study revealed that female drivers who put on a seat belt themselves were three times more likely to use a booster seat for their child (23).

The presented study found that single child families are 4,5 times more likely to travel safer. Probably, because it is easier to afford and maintain the one-child safety seat in a vehicle than having multiple seats. In America, lower-income families transported an average of three kids per vehicle and as the number of children increases to 3 or more, the front-seat usage surges. Similarly, as the number of children increased the affordability of CRS, maintaining, and use of a CRS decreased proportionately (34). Other studies have also found that child restraint use decreases with increased number of occupants in a vehicle (35,36). In Australia Bilston et al., conducted a study with children younger than 10 years old and they determined that having more children in a vehicle had decreased incorrect use of booster and seatbelts (19). The researchers were surprised by the results and explained it as that one-child polices the other.

Conclusion

This study showed that in Turkey, the rate of using a CRS is low even after the law was enforced, and it is an important public health and safety concern. Child restraint laws need to be enforced in full. Educating parents through media and well-child visits are extremely important. It was suggested to utilize family physicians and pediatricians in Turkey to educate and enlighten people to the benefits of the CRS. The parents must be encouraged to learn and follow CRS guidelines during their follow-up in family medicine and well-child visits, thereafter.

Limitations

This study was based on parents' self-reporting of CRS usage. It is possible that parents answered affirmatively but do not actually practice it. Since the self-reported safety belt usage seems to run parallel to the observed usage, it can be concluded that parents' self-reported usage data can be trusted (37).

In researching the age appropriate restraint use, survey was interpreted within the age limits set by AAP pertaining to the CRS. However, since the children's height and weight data was not attainable for the research, it wasn't factored.

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