Infant and child safety practices of parents

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ABSTRACT

Objectives: Accidental injuries are the leading cause of death among children. Many of these injuries could be prevented if the parents took additional safety precautions. We aimed to study the parent's safety practices and explore the possible correlating and contributing factors to unfavorable safety behaviors.

Method: Prospective interviews with the parents of infants seen consecutively during a routine well baby clinic visit were conducted using a structured 38-item questionnaire.

Results: Two hundred and eighty nine structured interviews were conducted and the mother was interviewed in 88% of cases. Only 4% of families had a smoke detector at home and 8% reported using an infant car seat. Most families owned an infant crib, however, 75% of the mothers reported sleeping next to the infant in the mother's bed. Most families (74%) had other older children. Up to 74% of the families reported keeping detergents and medications in a high or locked cabinet. Only 10% of the parents reported that their children use bicycle helmets and 24% use car seat belts. Use of car seat belts was more common in higher income families or if the father's age was >30 years (p=0.01). Twenty four percent of the parents reported allowing their children to play unsupervised in the street. These mothers were more likely to be non-educated (29% versus 5%, p=0.009) and 3 times more likely to have 4 or more children (95%, confidence interval 1.5-6, p=0.001).

Conclusion: The infant and child safety practices of many families living in Jeddah needs further improvements. Our data identifies certain areas that can be targeted by health promotion interventions including education, environmental modification, and legislation.

Keywords: Infant, child, safety, practice, parent, accident, injury.

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Accidental injuries are the leading cause of death in children aged 28 days to 15 years.[1,2] Although injuries account for less than 5% of deaths in the first year of life, they are the 3rd leading cause of death in the post-neonatal period.[2] In Saudi Arabia, a one in 5 victim of road traffic accidents is a child and the unrestrained child passenger is at great risk of serious injury or death.[3] Young children were involved mainly as pedestrians with significant risk of head injury.[4] Other types of accidental injuries include drowning and fire. Fire accounted for 9% of all childhood accidental injury deaths, the majority of these occurring in house fires and involving children less than 5 years old.[1] Ingestion of potentially toxic substances (hydrocarbon, household items, and drugs) is another important and preventable cause of morbidity and mortality.[5] The risk of injury and poisoning is influenced by the child's age, cognitive and motor skills, and environment.[6] Also, some maternal factors are associated with increased mortality from injury including young age (less than 20 years), low education, no prenatal care, and high parity.[7,8] Many of the accidental injuries could be prevented if the parents took additional safety

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precautions. The safety practices of parents living in Saudi Arabia have received limited study. Knowledge of parent and child safety related behaviors would help in assessing the need for health promotion interventions. We aimed to study the parent's safety practices and explore the possible correlating and contributing factors to unfavorable safety behaviors. We hypothesize that many mothers have inadequate safety practices and plan to raise awareness in the region to this important and preventable cause of childhood morbidity and mortality.

Methods. Parents of consecutive infants seen during a routine well baby clinic visit at King Abdulaziz University Hospital (KAUH), Jeddah, Saudi Arabia were identified. Prospective structured interviews with these parents were performed between October 1st 1999 and February 1st 2000. King Abdulaziz University Hospital (KAUH) is a multispeciality adult and pediatric hospital providing primary care to the Jeddah area, as well as secondary and tertiary care for most of the regional population of western Saudi Arabia. The well baby clinic is designed for routine follow up examinations and counseling of healthy infants and children, and for providing routine immunizations. Before consenting for the study, the approached parents were assured that taking part in the study is voluntary, their identity would remain anonymous, and that the quality of their child's future care at KAUH will not be affected if they choose not to participate. Parents who already participated in the study during a previous visit were excluded. Two pediatricians supervised and conducted the interviews using a structured 38-item questionnaire (Table 1). The questionnaire was worded on a simple reading level in Arabic or English languages and examined the family's socio-demographic characteristics and their infant safety practices (Table 1). Parents with other older children completed the last section with questions about their child safety practices (Table 1). The questionnaire included yes/no questions and Likert scale questions.[9,10] Response categories to the Likert scale items ranged from 1 to 4, with 1 indicating never and 4 indicating all the time. Statistical analyses were performed using Epi Info, version 6.[11] Tabular data was examined by Chi-square statistics. The magnitude of significant associations is presented as p values, odds ratios (OR), and the 95% confidence interval (CI) for the OR. A p-value less than 0.05 was considered statistically significant.

Results. During the study period, 289 structured interviews were conducted. All approached parents agreed to participate, however, 6 forms were excluded (incomplete). The mother was interviewed in 88% of cases and the father in 11%. Most of the interviews (49%) were conducted during the first well baby clinic visit with ages ranging between 6 weeks to 72 months (mean 4.7 months, standard deviation (SD) 6.5). Only 4 (1.5%) children were older than 18 months. Most families (74%) had other older children. Table 2 shows a summary of some demographic characteristics of the study sample. The majority of the parents were married (99%), and 78% of the mothers were housewives. Most parents (97%) lived in the Jeddah area and 186 (66%) were of Saudi nationality. Seventy-three (26%) families had only one infant, and the remaining 74% had 2-11 older children (mean 3.5, SD 2.5). Most families (73%) lived in an apartment, and the number of bedrooms ranged between 1-9 (mean 2.7, SD 1.4). Stairs were

Table 1 - Sample questions representative of the 38-item questionnaire.

Questionnaire section	Topics	Sample questions
Section 1	Demographics and social information	1. What are the child and parent's ages? 2. What is the family's nationality? 3. What is the family's monthly income? 4. What is the parent's highest education? 5. What is the parent's employment? 6. Live in a house or apartment?
Section 2	Infant safety related questions	1. Do you use an infant car seat? 2. Do you use an infant crib? 3. Do you use a baby walker? 4. Do you leave your infant home unattended? 5. Do you leave your infant alone in the bathtub?
Section 3	Child safety related questions	1. Do you have syrup of ipecac at home? 2. Are medications secured in a high cabinet? 3. Are detergents secured in a high cabinet? 4. Do your children use seatbelts? 5. Do your children use helmets? 6. Did you teach them pedestrian skills? 7. Do you allow your children to play unsupervised in the street?

Table 2 - Some demographic characteristics of the study sample (n=283).

Demographics	Results in the study sample	
Mother's Age	16-48 yrs (mean 28, SD 6)	
Father's Age	19-70 yrs (mean 35, SD 8)	
Parent's Education		
1. None	9% fathers/12% mothers	
2. School grade	55% fathers/56% mothers	
3. College or university	36% fathers/31%mothers	
Father's Employment		
1. Unemployed	9	3.0%
2. Professional	33	12.0%
3. Regular/office work	175	62.5%
4. Student	8	3.0%
5. Labor worker	36	13.0%
6. Retired	4	1.5%
7. Businessman	16	6.0%
Family's monthly income		
1. < 1000 SR (267 USD)	6	2.0%
2. 1000-2999SR (268-799 USD)	62	23.0%
3. 3000-6999SR (800-1867 USD)	141	52.0%
4. 7000-10,000SR (1868-2667 USD)	36	13.0%
5. >10,000 SR (2668 USD)	26	10.0%

yrs - years; SD - standard deviation; SR - Saudi Riyals; USD - United States Dollars

Table 3 - Results of the parents' infant and child safety practices questions.

Questionnaire items	Parent's response Number/Total* (%)	
Infant safety		
1. Uses infant car seat	22/283	8%
2. Have an infant crib	195/283	69%
3. Mother reported sleeping next to the infant in her bed	213/282	75%
4. Left the infant unattended at home	51/283	18%
5. Left the infant unattended in bath tube	16/282	6%
6. Uses infant walker	102/282	36%
Child safety		
1. Have syrup of ipecac at home	17/283	6%
2. Keeps medications in a high or locked cabinet	224/283	79%
3. Keeps detergents in a high or locked cabinet	253/283	89%
4. Put detergents in empty soft drink or food containers	12/283	4%
5. Children wear seat belts while in the car	50/208	24%
6. Children use helments while biking	20/205	10%
7. Teach children pedestrian skills	159/206	77%
8. Allow children to play unsupervised in the street.	50/207	24%

* Total number of parents to whom the question was asked and an answer was provided. Some child safety questions were asked to the parents with older children only.

present in 55% of the accommodations and 91 (32%) families had a helper (servant) at home. Twenty-nine (10%) parents reported history of a previous accident, mostly (93%) in the other older children. Regarding the general safety questions, only 11 (4%) had a smoke detector at home, most of them (82%) lived in an apartment complex. As well, only 10% of the fathers drove a car equipped with air bags. This number increased to 26% if the father was a professional. Families with higher monthly income (> 7000 SR or 1868 USD) were 13 times more likely to have a car equipped with air bags (95% CI 4.2-39, $p < 0.0001$). Parent's answers to the infant and child safety practices are summarized in Table 3. More mothers with a college or university education used infant car seats when compared to the non-educated (12.5% vs 5.5%, $p=0.04$). As well, parents who used infant car seats were more likely to have a car equipped with air bags ($p=0.0001$). The age, nationality, and income of the parents did not correlate with this factor. With regard to using an infant crib, 28% of those who did not have a crib used a special bed with protective sides. The mothers of infants with a crib were 6.5 times more likely not to sleep next to the infant in their bed (95% CI 2.6-19, $p<0.00001$). Thirty six of the 51 mothers who admitted leaving their infant unattended at home mentioned that it occurred only sometimes on the Likert scale. Twenty five (49%) of these mothers had a helper at home, and 88% had other older children. If the mother had a helper or older children, she was more likely to report leaving the infant unattended at home ($p=0.007$ and 0.02). These mothers were also more likely to report leaving their infant unattended in the bathtub when compared to those who never left their infant unattended at home (15% vs 3%, $p=0.002$). Regarding families who used an infant walker, 54% of them also had stairs in their homes. Infants less than 6 months of age were less likely to have a walker when compared to the older infants (32% vs 59%, $p=0.002$). Most families (74%) had both medication and detergent cabinets. Families with a medication cabinet were 4.7 times more likely to also have a secure detergent cabinet (95% CI 1.2-11, $p<0.0001$). The socio-demographic characteristics had no statistically significant impact on these factors. None of the parents who admitted putting detergents in empty soft drink or food containers had a previous accident or poisoning incident. This behavior did not correlate with whether they have a detergent cabinet or not, or with other demographic variables. The use of car seat belt was more common in children of higher income families ($p=0.01$), and if the father's age was >30 years when compared to a father's age of <30 years (24% vs 5%, $p=0.01$). The parent's educational level and occupation did not correlate with this safety practice. Parents who used infant car seats were 6.5 times more likely to report using seat belts (95% CI

1.9-26, p=0.001). As well, those using bicycle helmets were more likely to report using seat belts (65% vs 4%, p<0.0001). If the family had a previous accident, they were more likely to report using bicycle helmets (30% vs 11%, p=0.02), and teach their children pedestrian skills (p=0.04). Parents who allowed their children to play unsupervised in the street were 3 times more likely to have 4 or more children (95% CI 1.5-6, p=0.001) and the mothers were more likely to be non-educated (29% vs 5%, p=0.009). This behavior was not related to the number of rooms at home, however, these parents were more likely to report teaching their children pedestrian skills when compared to those who never allowed their children to play in the street (96% vs 71%, p=0.0007).

Discussion. The study results suggest that the infant and child safety practices of many families living in Jeddah needs further improvements. Most families had no smoke detectors, which are known to be protective against death in fires, particularly in young children.[12] Smoke detectors education and legislation are strongly needed in our community. Limited number of families owned cars equipped with air bags, which correlated with the father's occupation and income reflecting the relatively higher price of these cars. This unfortunately limits the access to such a safety device. Very few parents reported using an infant car seat. Unrestrained infants are usually riding on the lap of another occupant, which increases the risk of serious injury or death.[13] The use of bicycle helmets correlated with the use of seat belts and teaching pedestrian skills, suggesting higher safety awareness. If the family had a previous accident, they were even more likely to report using bicycle helmets. Other researchers observed that the parents whose children have sustained a recent injury had a higher perception of risks of injury.[14] Another safety concern was allowing the children to play unsupervised in the street, which was related to increased parity and low maternal educational level. Although the parent reported teaching these children pedestrian skills, increased education is required considering that young children are frequently involved in pedestrian vehicle collision fatalities.[4,15] Although most parents had an infant crib, the majority continued to sleep next to the infant in the mother's bed. This practice needs to be discouraged as it may predispose to suffocation or falls. Few mothers reported leaving their infants unattended at home or in the bathtub, particularly if they had an older child or a helper at home. Leaving an infant unattended or with a young sibling is a form of child neglect. This behavior may threaten the life of the infant as reported recently in a Saudi infant.[16] He was left with his 4-year-old sibling who playfully inserted a nail tack into his mouth resulting in an impacted esophageal foreign body.[16] Another safety issue was using infant walkers despite having stairs at home. This area needs increased education and legislations to prevent related injuries. One strong safety practice was using medication and detergent cabinets. Very few parents admitted putting detergents in empty soft drink bottles, none of which had a previous accident or poisoning incident suggesting a lower perception of risks of poisoning. Further education about this unwise practice is needed.

There are some limitations to our study. First, the study sample is relatively small which may explain why some socio-demographic characteristics did not significantly relate to certain safety practices. The study sample also was somewhat biased toward married and relatively older parents as a result of the timing of the interviews. Our findings may not apply to single parents or younger mothers (<20 years) who represented only 1% and 4% of our sample. Other than these shortcomings, our sample was representative of the various community sectors living in Jeddah. Another limitation is the possible under reporting of poor safety practices and over reporting of good safety practices. This limitation can be overcome only by home visits. However, all our interviews were conducted in a 1 to 1 setting, which may limit the impact of false reporting.

We conclude that the infant and child safety practices of many families living in Jeddah needs further improvements. Health promotion interventions are urgently needed including education, environmental modification, and legislation. Our data identified certain areas that can be targeted by these health promotion interventions including: provision of smoke detectors, infant and child safety restraint education and legislation, education of infant sleep environment, parent education on home hazard reduction, education about the use of syrup of ipecac, bicycle helmet education and legislation, and finally, pedestrian education aimed at the child and the parent.

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