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Original research article

Accident prevention and first aid knowledge among preschool children's parents

Bálint Bánfai *, *Krisztina Deutsch*, *Emese Pék*, *Balazs Radnai*, *József Betlehem**University of Pecs, Faculty of Health Sciences Institute of Emergency Care and Health Pedagogy, Hungary*

INFORMACE O ČLÁNKU

Received: 2014-10-05

Accepted: 2015-01-12

Published online: 2015-03-10

Keywords:

Parents

First aid

Accident prevention

Kindergarten

ABSTRACT

Introduction: Based on both international and national health statistics, accidents from various mechanisms are among the most common causes of death in childhood. Our aim was to examine the first aid and accident prevention knowledge and attitudes of parents.

Materials and methods: In this study, parents of 3–7 years old children were involved in six kindergartens located in Hungary. A self-fill-in questionnaire applying standardized items was used to collect data. In the investigation, 307 parents ($N = 307$) were included. Out of them, 234 persons filled out the questionnaire correctly ($n = 234$). The statistical analysis was made with SPSS 20.0 statistical software. For analysis descriptive statistics, Chi-square-test and ANOVA were used.

Results: Three-quarters of the children have suffered at least one accident in their past life (74.3%). A total number of 174 parents attended first aid courses earlier (74.4%). The previous knowledge is based mainly on the personal information on their driving license (81.6%). Based on parent's results, there is a need for teaching first aid (70.5%) and accident prevention (89.7%) to children in kindergarten. There were only 10 parents, who answered all the featured first aid situations correctly (4.3%). Between the subjective judgment of the financial status and the correct answers we found a significant correlation ($p = 0.03$). The previously accomplished first aid training ($p < 0.05$) and the educational attainment ($p = 0.029$) had a positive impact regarding the correct answers.

Conclusion: The level of first aid knowledge among the parents of kindergarten children was lower than expected. With an offer to participate in a first aid course the level of knowledge from both sides (children and parents) could be increased. This could contribute to a better accident prevention and first aid practice among parents.

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* **Korespondenční autor:** Bálint Bánfai, Vorosmarty u. 4., 7621 Pecs, Hungary; email: balint.banfai@etk.pte.hu
<http://dx.doi.org/10.1016/j.kontakt.2015.01.001>

Introduction

According to statistics, accidents from various mechanical devices are among the most common causes of death all over the world, including Hungary. Accidents can happen anywhere, to anyone, and children and adults are affected equally. Children are especially involved in accidents due to the tendencies of their age characteristics (lack of fear, inquisitiveness) [1, 2, 3, 4].

Based on the Central Statistical Office (KSH) data, 1838 home related accidents occurred in 2011 in Hungary [5]. The number of accidents usually increases during early childhood and adolescence. The rise in accidents for adolescents may be related to traffic accidents caused by those with newly acquired driving licenses (there were 15174 traffic accidents involving personal injury in 2012 in Hungary, in which 605 were fatal) [5]. The statistics show that more young people between 0–24 aged group die in different types of accidents, than all the other reasons [6]. In Hungary about 24,000 children are hospitalized every year, from which about 300 involve fatalities [5]. A significant risk group are consisted of kindergarten children (3–7 years old), because they are often involved in accidents [1, 6]. Thus, it will be important to have a person close to the child who has appropriate knowledge about accidents because with proper attention they can be prevented. Therefore, the parents have a great, deal of responsibility. An adequate amount of first aid knowledge can increase the chances of survival of the injured person. Since children spend most of their time at home, most of the accidents occur at home [7, 8]. The most common types of accidents are; falls, burns, drowning, choking, cuts and wounds [7, 9]. Poisonings are frequent too, but these could be prevented by following some precautionary measures [10]. Eldosoky et al. investigated accidents among 0–12 years old children in Egypt [8], and their consequences by studying the first aid knowledge of their parents. More research has been carried out in Hungary, which examined the first aid knowledge and the motivation of lay people [11, 12, 13, 14, 15]. People in Hungary are only required to learn first aid when they want to obtain a driver's license, so their knowledge is often less than what is required. Several authors think that first aid education should start as early as primary school [13,16].

Not only is first aid important, but prevention of accidents are also important. Páll et al. investigated the possibilities of these types of prevention [17]. A program was created which assigned prevention as their main goal [18].

There were many surveys in Europe, which examined the parents' first aid and prevention knowledge [19, 20, 21, 22]. Unfortunately they showed that their knowledge is not adequate enough, and several of them do not know the various methods with which accidents could be prevented. The literature shows that basic first aid knowledge is an important point to prevent accidents in early childhood. In our study, we attempted to assess the prevention and first aid knowledge among the parents with children in kindergarten.

Material and methods

In our research, parents of 3–7 years old children were involved in six kindergartens located in Hungary (Muraszemenye, Tornyiszentmiklos, Lovaszi, Letenye, Lenti, Nagykanizsa). Data collection was made by using a self-fill-in questionnaire. It contained both standardized and self-made elements [19]. Data collection was conducted between November and December 2013. The parents and leaders of the various institutions were notified about the survey before the study began. After obtaining the necessary licenses, the parents received the questionnaires. If there were more children attending the kindergarten from the same family, the parents had to fill out only one questionnaire.

A total of 307 parents were involved in the investigation ($N = 307$). 234 questionnaire ($n = 234$) were returned (return-ratio: 76.2%). It did not excluded any questionnaire due to incorrect or incomplete answers.

The self-made part of the questionnaire contained the following question-groups: sociodemographic, previous accidents of children, and knowledge of parents. The standardized part of the questionnaire contained the following questions: eight situations in which first aid should be delivered. In this case the parents had to choose the right one from the four possible answers.

The statistical analysis was made with SPSS 20.0 statistical software. For analysis descriptive statistics, Chi-square-test and ANOVA were used. A p -value < 0.05 was considered statistically significant.

Results

Sociodemographic data

Most of the questionnaires were filled out by the mothers of children (87.6%). The following table shows the sociodemographic data of the parents (Table 1).

Previously, we mentioned the literature data, which showed the most frequent types of injuries specific at this age [6, 7, 8]. The parents had to rank these in the questionnaire. The following results were obtained (Table 2).

Previous accidents

According to the answers, approximately three-quarters of the children have suffered at least one accident earlier in their lives (74.3%). 15 of them were injured in the month prior to filling out the questionnaire (6.4%). Most of the accidents occurred at home (88.5%). Other accidents occurred in the kindergarten, on the playground, or at other locations (in the park, garden, or gym). We examined the factors which influenced the occurrence of earlier accidents. It showed that gender did not play any role in accidents (Chi-square = 5.323; $df = 4$; $p = 0.256$). The financial position, diverge from the expected did have influence on the number of the previously accidents,

Table 1 – Sociodemographic data

	Number (n = 234)	%
Filling by		
Mother	205	87.6
Father	27	11.5
Other	2	0.9
Age		
<20	1	0.5
20–30	51	21.8
31–40	151	64.5
40<	31	13.2
Educational attainment		
Primary school	32	13.7
Vocational school	59	25.2
Secondary school/High school	86	36.8
College/University	57	24.3
Occupation		
Health care worker	14	6.0
Non health care worker	155	66.2
Housewife	65	27.8
Financial status		
Bad	23	9.8
Satisfactory	45	19.2
Average	105	44.9
Acceptable	57	24.4
Excellent	4	1.7
Number of children		
1	74	31.6
2	101	43.2
3	43	18.4
4 or more	16	6.8
The child's gender		
Girl	110	47
Boy	124	53

because the results showed that those children suffered the fewest accident, whose parents ranked themselves as having average financial status (Chi-square = 11.803; df = 4; $p = 0.019$).

Previous first aid knowledge and perception

The first aid aptitude of parents was examined. Based on the answers, 174 parents attended first aid course earlier (74.4%), but 60 parents never learned first aid previously. Their previous knowledge was based on the followings: driving license information, workplace and school records. The results showed that most of those interviewed, learned first aid during their driving instructional course (142 parents).

The perception of the parents was surveyed in relationship to their knowledge. A 4-point Likert-scale was used (1 = “almost no knowledge”; 2 = “basic things are clear”; 3 = “knows the principles and able to use”; 4 = “knows and uses the latest guidelines”). A total of 145 parents believed they knew the basic principles (62%). Only 4.7% of the parents gave the answer that they know and are able to use the latest guidelines (Table 3). The influence factors were examined. There was significant correlation between the knowledge assessment and the educational attainment. The higher level of education they had, the better they considered their knowledge (Chi-square = 18.592; df = 9; $p = 0.029$). In addition, the previously accomplished first aid training had a positive impact on the results (Chi-square = 18.151; df = 3; $p < 0.05$).

Following from above the source of the previous knowledge came from the first aid courses (67.1%), the media (37.6%), health professionals (33.3%), books (21.8%) and relatives (19.7%).

86.8% of the parents would participate in a possible free course, thus high motivation was assumed in these cases. 112 parents provided first aid for their children earlier. The answers also showed, that in 29 cases a child was the first witness of an accident. In these cases, most children called for help (86.21%).

Accident prevention and first aid education in kindergarten

We speculated whether parents considered it important to teach children first aid and prevention knowledge in the kindergarten. In most cases, the parents had a positive attitude: in the case of prevention, the ratio of affirmative answers was 89.7%, while regarding first-aid it was 70.5%. The literature reported similar results [23, 24, 25, 26]. We also taught first aid for kindergarten children earlier [27].

Table 2 – The most common types of accidents in childhood

Priority	Present study (2013)	Páll [6]	Eldosoky [8]
1.	Fall	Fall	Burn/scald
2.	Cut wound	Poisoning	Cut wound
3.	Burn/scald	Traffic accident	Fall
4.	Drowning/choking	Burn/scald	Foreign body in airway
5.	Traffic accident	Strangulation	Poisoning
6.	Poisoning	Drowning or choking	–
7.	Strangulation	–	–

We were also looking for any influencing factors. According to the study, there was not a significant correlation between the opinions about prevention education and the age and occupation of the parents. But we did find a significant correlation between the opinion regarding first aid education and the parents who work in the field of health care (Chi-square = 7.075; df = 2; $p = 0.029$).

Table 3 – Perception of the own knowledge and number of correct answers

	Number	%
Perception of the own knowledge		
Almost no knowledge	19	8.1
Basic concepts are clear	145	62.0
Knows the principles and able to use	59	25.2
Knows and uses the latest guidelines	11	4.7
Number of the correct answers		
1 correct answer	0	0.0
2 correct answers	2	0.9
3 correct answers	3	1.3
4 correct answers	30	12.8
5 correct answers	46	19.7
6 correct answers	56	23.9
7 correct answers	59	25.2
8 correct answers	26	11.1
9 correct answers	10	4.3

The first aid knowledge of parents

The last nine questions of our questionnaire contained situations, which suggested the importance of first aid. The parents had to choose the correct response from four available answers. Except for the last question (epistaxis), the situations were obtained from an earlier investigation [19]. The correct answers corresponded to the international guidelines [28].

The first scenario involved scalding. 82.5% of the parents would do the correct thing which would be the following; they would remove the clothes, cool the injured area with cold water and call for an ambulance.

The next question reviewed how to cover the burned or scalded area. Only less than half of the parents (48.7%) knew the correct answer: leave it uncovered. Parents also suggested an additional “fifth answer”, which was not given in the initial survey and involved putting sour cream or oil on the wound. These methods should be avoided if at all possible.

The third scenario consisted of febrile seizures, in which we investigated the knowledge about the correct procedures. More than half of those interviewed (55.1%) knew the right answer. They would lie the children on the floor, loosen their clothing and call the ambulance.

Among children, accidents through falls are very common [7, 8, 9]. The following situation assumed a child

fell down from climbing equipment. 194 parents (82.9%) chose the correct answer: they would immobilize and remain with the injured child until the ambulance arrives.

Scenario five involved a drug poisoning case (the child swallowed a bottle of medicine). If parents are not prudent, careful and precautionary enough, it can easily occur. About three-quarter (76.9%) of parents chose the correct answer; they would immediately transport the child and the empty bottle to the hospital.

In this age, foreign body aspiration in the trachea is very often caused by a meal or from smaller toys. The next scenario consisted of the situation above. The description was not completely clear about the status of the child, so the answers from the parents were divided in terms of care. Approximately half of the parents would call the general practitioners (GP) for an advice in this case. 33.8% would call the ambulance immediately, 14.1% answered they would only do something if the problem still remains after a week. 3% of the parents would induce vomiting with the child.

The next scenario was a Basic Life Support (BLS) situation (a boy rescued from drowning without breathing and a pulse). We got the most correct answers in this case 97% of the time as the parents recognized the algorithm correctly.

The next type of injury we investigated was a cut or wound (a girl cut her palm and a piece of glass was sticking out of the wound). Despite the frequent occurrence of these types of injuries, we obtained poor results. Only 58.5% of parents knew the correct treatment: they should bandage the wound carefully while not removing the piece of glass and take the child to the hospital.

Our last question was not included in the original questionnaire. It consisted of a bleeding nose (epistaxis), because it is also a frequently occurring type of injury [8]. About three-quarter of parents recognized the correct answer (73.5%). This could lead to a dangerous situation, because 18.8% of the parents would suggest that the child tilt their head back. This type of treatment may cause aspiration.

Based on the results, there were only 10 parents, who answered all the questions correctly (Table 3). The worst performing parents gave only two correct answers. Parents answered correctly an average of 6.09 questions (SD = 1.44). The factors were examined which influenced the number of the correct answers. According to the ANOVA there was no significant correlation between the answers and gender ($F = 1.502$; $p = 0.225$), educational attainment ($F = 1.65$; $p = 0.178$) or age ($F = 0.427$; $p = 0.734$). As expected, the health care workers achieved better results than other workers or housewives, but the difference was not significant ($F = 2.76$; $df = 2$; $p = 0.065$). We also did not find a significant correlation between the correct answers and the individual's perception of their own knowledge ($p = 0.682$), or the fact that the child had an accident earlier in their life ($p = 0.48$). Between the subjective judgment of the financial status and the correct answers, we found a significant correlation ($p = 0.03$), but interestingly, the most correct answers came from those who ranked their financial status as “satisfactory”.

Discussion

As in previous research, the returned questionnaires were filled out mostly by mothers (87.6%) [8, 19, 20, 21, 29]. Table 2 shows the frequency of the accidents we studied. The most frequent injury type were fall accidents according to the parents. It may also show an overlap with traffic accidents (for example falling off of bicycle). The latter accidents are also threatening children [30]. Parents had to rank the types of accidents first, then they could enumerate the previous injuries of their children. Concerning the location of the accidents, we are able to say that most of them occurred at home (88.5%). It is not surprising, because children spend most of their time at home. A previous research project conducted in Hungary showed similar results in which 63% of the accidents occurred at home [7]. There was no correlation between the previous, accidents and gender, age or location (village, town) where the injuries occurred. The perception of their financial status significantly correlated with the previously occurred accidents ($p = 0.019$).

Approximately three-quarter of the parents participated in a first aid training earlier (74.4%). This ratio is higher than a previous study in England (27%) [19]. In our study, the rate of participation did not affect the number of the correct answers. A study taking place in Turkey, also showed low participation-rates [21], but in Egypt it was similar to our investigation (73%) [8]. 86.8% of the parents would participate in a possible free first aid course. Previous research showed a similar high propensity [13, 19]. According to interviews, previous knowledge derived from first aid (67.1%) and the media (37.6%). An earlier Egyptian study showed similar answers, but in a reversed sequence [8]. Parents felt it was important that their children should already learn accident prevention and first aid in the kindergarten.

Several studies showed, that first aid education is possible in kindergarten and in primary school, because children can learn the basics and they are able to apply it [23, 24, 25, 26, 27].

Based on the answers of our study, the parents almost never left the children alone at home. It is important, because a study in Egypt showed that most of the accident occurred in the 9–12 years old ages probably caused by being at home alone [8].

The last nine questions involved different first aid scenarios. Our results were comparable with the results of the original research [19]. The number of correct answers was similar in the first question (burn or scald) in both studies. The English study showed more correct answers for the treatment of scalding (66%) compared to our study, where only half of the parents knew the correct treatment (48.7%). In the next scenario (febrile seizures), the result of the English study was worse as only approximately one-third of the parents chose the correct answer (38%). There were similar results in cases of “falls from a climbing frame”, “medical poisoning” and “foreign material aspiration” in both research. The next situation was the BLS. Cardiac arrest is not the most common situation in these ages, but

the most correct answer was picked in this question (97% and 99% of the time respectively). In contrast, only half of the parents could correctly answer the treatment of cut wound in both studies. The last question was self-made (epistaxis), so it was not comparable. We examined the eight obtained questions which showed that only 12 parents chose the right answer in each case (5.1%). In the previous study, 22 parents identified all the correct answers. In our study there was no significant correlation between the correct answers and the gender, perception of knowledge and the occupation, but we found significant correlation with the subjective judgment of the financial status. The cited study in Egypt showed a clear correlation between the level of knowledge and age, educational attainment and the previous first aid course [8]. There was a similar study in Taiwan regarding the knowledge of the parents [22] which pointed out that the highest level of knowledge of parents involved scalds, choking and epistaxis, while the lowest was resuscitation.

Conclusion

This study demonstrated that the majority of parents learned first aid only during their instructional driving course. The motivation behind participation proved to be high. However, in Hungary there are only a few opportunities for learning first aid. In our opinion, it is a positive result that parents think it is important to learn accident prevention and first aid in the kindergarten. The answers during the scenarios showed that there are differences between the knowledge of the various types of injuries. We concluded that the level of first aid knowledge among parents is lower than expected. Because of the high level of motivation, there should be more opportunities for first aid training, so the level of knowledge could increase. It would be important, because some of the accidents can be prevented through acquiring proper knowledge.

Limitations

Use of self-reported data led potentially to a reporting bias in social desirability. Since the study participants were parents from six kindergarten in Hungary, the findings may not be generalized to all parents in Hungary. A large regional or national survey would help to further assess parents' self-sufficiency regarding first aid for young children.

Conflict of interest

No conflict of interest.

Acknowledgements

Authors would like to thank all participants in the research.

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