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Research Article

Unintentional injuries at home and in the preschool setting: Greek ECEC professionals' and preschoolers' parents' knowledge and attitudes towards first aid

Konstantina Rentzou[1], George Daglas[2]

Abstract: Although safety of home and preschool setting is a key quality indicator of the two main environments in which preschoolers spend most of their day, most unintentional injuries during early childhood take place in these two settings. Thus, despite the frequency of accidents during early childhood, scarce research has explored both the epidemiology of childhood injuries and the knowledge and attitudes of ECEC professionals' and preschoolers' parents towards first aid. Acknowledging this gap in literature, the present study aimed at exploring 74 Greek ECEC professionals' and 213 preschoolers' parents' knowledge and attitudes towards first aid. In addition, the study aimed at mapping the most frequently occurring accidents both at home and at preschool, as well as the places withing these two settings where most of the accidents happen. Results of the present study indicate that although participants have positive attitudes towards first aid, and most of them have been trained in first aid, their knowledge of handling accidents and other health related issues is limited. In addition, the results showed accidents rarely happen at home and at preschool. The accidents that have been reported to occur take place during children's free play. The most common places where accidents occur are in the living room and the kitchen. The results highlight the need for frequent training both for parents and ECEC professionals, for intersectoral collaboration between health and education organizations to design interventions and for awareness raising campaigns.

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First aid; Unintentional injuries; Knowledge; ECEC professionals; Preschoolers' parents

Introduction

Maintaining and ensuring a healthy and safe environment is one of the key quality components of an early childhood education and care (hereafter referred to as ECEC) program. However, limited attention has been given to this aspect of quality both in Greece and internationally, even though unintentional injury rates highly among preschoolers (World Health Organization [WHO], 2008). Previous research from Greece reveals that ECEC professionals have not been adequately prepared to provide first aid during their initial professional preparation (Rentzou, 2020; Rentzou & Daglas, 2018). In addition, studies examining the quality of ECEC in Greece highlighted that in terms of health and safety practices the quality of preschool classrooms is rather minimal, whereas in infant/toddler classrooms the quality in terms of health practices is minimal, but rather good in terms of safety practices (Rentzou, 2011). Building on Aronson's (1992; cited in Gratz, 1994) argument that ECEC program quality can be maintained and improved by mapping health and safety conditions and emergent trends in ECEC programs, the present study aspires to fill the research gap related to the knowledge of and attitudes of ECEC professionals and preschoolers' parents towards first aid.

Unintentional Injuries During Early Childhood

Childhood unintentional injuries are among the greatest public health concerns, as along with child violence, they are the major killer for thousands of children every year (Góes et al., 2023; WHO, 2008). Thus, the injury burden is related not only to mortality but also to children's morbidity, as according to Vincenten

[1] University of Ioannina, Department of Early Years Learning and Care, Ioannina, Greece, e-mail: krentzou@uoi.gr, ORCID: https://orcid.org/0000-0002-0692-7283
[2] Municipality of Nikaia, Early Childhood Education and Care Department, Agios Ioannis Rentis, Greece, e-mail: daglasgiorgos@gmail.com, ORCID: https://orcid.org/0009-0002-7542-8362

et al. (2005, p. 183-184) "it is estimated that every day in the EU, not only do 14 children die due to injuries, but also 2240 are admitted to a hospital and another 28 000 receive treatment in an emergency and accident department. In 2001, a total of 4793 557 Disability Adjusted Life Years (DALYs) was attributed to child injury deaths for children aged 0 to 19 years in Europe, accounting for 200 DALYs per 10 000 children overall and 156.28 DALYs per 10 000 children for the youngest, aged 0 – 4 years". The mortality and morbidity burden is higher among preschoolers, as children younger than 5 years are more likely to have unintentional injuries (Kahriman & Karadeniz, 2018; Kotch et al., 1993).

The increased rate of unintentional injuries among preschoolers has been attributed to various factors related to their developmental, physical, and behavioral characteristics (Calandrim et al., 2017; Góes et al., 2023; WHO, 2008). Physical characteristics that make preschoolers more prone and vulnerable to accidents and injuries include but are not limited to narrower airways, lower body mass, thinner and more fragile skin and the skull-body disproportion (Alhajjaj et al., 2021; Calandrim et al., 2017; Góes et al., 2023; WHO, 2008). Turning to developmental and behavioral factors these include but are not limited to preschoolers' lower motor skills, their curiosity and tendency to experiment and imitate behaviors, their innate desire to explore the world and to exert autonomy, their active lifestyle as well as their lack of fear and inexperience and inability to prevent dangerous situations (Alhajjaj et al., 2021; Bassam, 2022; Calandrim et al., 2017; Góes et al., 2023; Lee & Oh, 2018; WHO, 2008).

Given that preschoolers' time is shared between home and ECEC programs, these are the places where most of unintentional injuries occur during early childhood. Depending on the social and educational policy of each country, and whether children participate in ECEC programs or not, results about where most of the injuries occur, are inconsistent. For example, Kotch et al. (1993) found that of the 327 accidents, 146 occurred in homes, 149 occurred in or on the way to or from the childcare center, and 32 occurred in other locations. Li et al. (2012) also suggest that schools and playgrounds are the most common location for falls. On the other hand, other studies highlight that most early childhood injuries occur at home (Bánfai et al., 2015; da Costa et al., 2017; Nageh et al., 2020; Thein et al., 2005). Irrespective of the policies and of whether preschool aged children spent more time at home or at an ECEC program, it is apparent that parents and ECEC professionals are more likely to witness unintentional injuries. In addition, Kotch et al. (1993) report that the nature of injury does not differ substantially between injuries that have occurred at home and those that have occurred in ECEC programs. This substantiates the need for equipping parents and ECEC professionals with the skills and knowledge needed to treat injuries, that is first aid provision.

Yet, although the important role of parents and ECEC professionals as first aid providers is widely acknowledged research to date indicates that they both lack even basic first aid training skills. Specifically, as far as parents are concerned literature review highlights that although their quick and correct response during an injury can increase the chances of survival of the injured child and can limit disability (Alhajjaj et al., 2021; Anwar et al., 2021; Bánfai et al., 2015). Previous studies have shown that parents' first aid and accident prevention knowledge is inadequate. Turning to ECEC professionals, although most of them have witnessed injuries at the program (da Costa et al., 2017; Góes et al., 2023) and despite that fact that most injuries in ECEC require only first aid treatment (Li et al., 2012), ECEC professionals have been found to be insufficiently prepared to provide first aid (Ilha et al., 2021; Rentzou, 2020; Rentzou & Daglas, 2018) and they lack even basic first aid training skills (Góes et al., 2023; Lee & Oh, 2018).

The Present Study

Given the high percentage of unintentional injuries during early childhood, "in order to decrease the burden of injuries, it would be helpful to consider the changing risk of injury according to where young children are being cared for" (Kotch et al., 1993, p. 184). However, despite the fact that home and ECEC programs are the main settings where preschoolers spent their day, in Greece, the scarce studies which have explored educators' knowledge on first aid (e.g. Patsaki et al., 2012), have focused on educators working in higher education levels. On the other hand, Dimopoulos (2015) postulates that the limited studies conducted in Greece have aimed at assessing the level of knowledge among health professionals

and not among educators. In addition, in Greece we lack not only studies about the knowledge parents and ECEC professionals have on first aid provision, but also data on unintentional injuries during early childhood. The latest data available, to the best of our knowledge, indicate that between 1992 and 2004, we had 1593 deaths of children aged birth to 14 years of age. 874 of them were due to car accidents, 135 to drownings, 82 to fall, 47 to burns, 23 to poisoning and 423 to other not-known causes. Thus, it seems that 81% of children's accidents happen at home, while children were with an adult (Naftemporiki, 2021).

As it becomes apparent, although in other countries the epidemiology of childhood injuries has been well studied (e.g. Alhajjaj et al., 2021; Bánfai et al., 2015; Ilha et al., 2021; Kamel et al., 2014; Nageh et al., 2020; Yürümez et al., 2007), in Greece no research has been conducted with the aim to explore ECEC professionals' and preschoolers' parents' knowledge of and attitudes towards first aid. However, enriching the literature related to the epidemiology of childhood injuries and mapping ECEC professionals' and parents' knowledge and attitudes towards first aid and injury prevention is important for many reasons. First of all, as we have seen, childhood injuries occur in the main settings in which children spend most of their time. Therefore, it is important for parents and educators to have been trained in first aid as first aid knowledge can increase the chances of survival of the injured person. In addition, when parents and educators have first aid knowledge and training and understand the importance of first aid training, they can have an active role in health promotion and accident prevention among children. Thus, when ECEC professionals acknowledge the importance of first aid training, they can play a significant role in sensitizing parents in accident prevention and first aid training.

Understanding the epidemiology of unintentional injuries during early childhood as well as ECEC professionals' and parents' first aid knowledge is also important as according to Góes et al. (2023) WHO, the United Nations Children's Fund (UNICEF), and other organizations have pledged to make childhood injuries a global public health and development priority. Thus, it is recommended that policies, strategies, and action plans related to this issue are solid and include the implementation and dissemination of education and training programs on childhood injuries with health professionals. Furthermore, more research on this issue is important as it can reveal the need for training, technical assistance, or further resources both for parents and ECEC professionals, as well as the action that needs to be taken from education and health organizations. Finally, such research can give an insight into the factors that need to be considered to create safer environments for children.

Drawing on the above, the present study aspires to address this mismatch between the importance of the theme of unintentional injury prevention and treatment during early childhood and the scarcity of data. Specifically, the study aims at exploring ECEC professionals' and preschoolers' parents' knowledge and attitudes towards first aid, whereas at the same time it aims at mapping the most frequently occurring accidents both at home and at preschool, as well as the places withing these two settings where most of the accidents happen.

Method

Sample and Demographics

Data for the present study was collected in Spring 2023. Due to the exploratory nature of the study, the authors employed snowball and convenience sampling techniques. The total number of participants were 74 ECEC professionals, all of whom were females (100%) and 213 parents of preschool aged children, of whom 87.3% were the mothers of the children and 12.7% the father of the children. Table 1 presents the demographic information of the sample.

Table 1. Demographic information of the participants

Demographics	ECEC professionals		Parents	
Age group	20-29	2.7%	Less than 20	0.5%
	30-39	20.5%	21-30	10.3%
	40-49	46.6 %	31-40	64.3%
	Older than 50	30.1%	41-50	24.9%

Level of education	Post-secondary education	48.6%	High school	1.4%
	Technological educational institute -ECEC	36.5%	Senior high school	26.3%
	University ECEC	4.1%	Post-secondary education	8.9%
	University kindergarten teacher	5.4%	University	45.5%
	Master	4.1%	Master	15.0%
	Other	1.4%	Other	2.8%
Partners' level of education			High school	1.4%
			Senior high school	39.8%
			Post-secondary education	5.2%
			University	38.9%
			Master	10%
			Other	4.7%
Position in the ECEC center	Director	21.6%		
	Main educator	32.4%		
	Helper	44.6%		
	Student-practicum	1.4%		
Years of experience	M = 18.66 (8.53)			
Type of program	Infant program	33.8%		
	Infant/child program	23%		
	Preschool program	43.2%		
Children's age	2-12 months	5.4%	Child 1	M = 5.02 (2.73)
	13-24 months	20.3%	Child 2	M = 3.28 (1.96)
	25-36 months	9.5%	Child 3	M = 2.75 (1.08)
	3-4 years	40.5%		
	Other	24.3%		
Number of children			1 child	34.3%
			2 children	53.5%
			3 children	11.3%
			Other	1%
Children's gender			Child 1	57.7% boy
			Child 2	48.6% boy
			Child 3	58.3% boy

*Note: Standard deviation in parenthesis

Data Collection

Data for the present study was collected via questionnaires, which have been developed by the first author of the study, after the literature review. The questionnaires were administered in a paper format. The first author created a questionnaire for parents and one for ECEC professionals. The questionnaire which was addressed to parents consisted of five parts. Part one included 12 questions which aimed at recording participants' demographic information. Part two included 11 questions which aimed at mapping participants' previous education, training and experience in first aid provision (e.g. if they have been trained in first aid, type and timing of training, reasons why they have or have not been trained in first aid, if they have provided first aid in the past, etc.). Part three, which was adopted by Abelairas-Gómez et al. (2020), included four questions which aimed at collecting participants' attitudes towards first aid (e.g. to whom they believe first aid training is addressed, if they want to be trained further in first aid, etc.). Cronbach alpha for part three has been found to be 0.79. Part four included three questions. The first one aimed at exploring how often a list of accidents occur at home. A five-point scale, ranging from 1 = never to 5 = daily, was used to record the frequency with which accidents occur. Cronbach alpha for this part has been found to be 0.75. The other two questions, which were open-ended, aimed at mapping the main places in and outside the house, where most accidents happen. Finally, the last part included one question which aimed at exploring how well participants can handle a series of accidents/emergent cases. Specifically, a list of 51 accidents and emergent cases reported in first aid books was given to participants. Using a five-point scale ranging from 1 = no knowledge at all to 5 = very good knowledge, participants were asked to

rate how well do they think they can handle each of the 51 cases in case they occur. Cronbach alpha for the fifth part of the questionnaire has been found to be 0.98.

The questionnaire which was addressed to ECEC professionals had the same structure. Part one included 14 questions which aimed at recording participants' demographic information. Part two included 13 questions which aimed at mapping participants previous education, training and experience in first aid provision. Part three, which was adopted by Abelairas-Gómez et al. (2020), included five questions which aimed at exploring participants' attitudes towards first aid. Cronbach alpha for part three has been found to be 1.06. Part four included two questions. The first one aimed at exploring how often a list of accidents occur at the preschool setting. A five-point scale, ranging from 1 = never to 5 = daily, was used to record the frequency with which accidents occur. Cronbach alpha for this part has been found to be 0.85. The second question, which was open-ended, aimed at mapping the main places within and outside the ECEC setting, where most accidents happen. Finally, part five included one question which aimed at exploring how well participants can handle a series of accidents/emergent cases. Specifically, a list of 51 accidents and emergent cases reported in first aid books was given to participants. Using a five-point scale ranging from 1 = no knowledge at all to 5 = very good knowledge, participants were asked to rate how well do they think they can handle each of the 51 cases in case they occur. Cronbach alpha for the fifth part of the questionnaire has been found to be 0.97.

Data Analysis

The data from questionnaires were imported into two separate Microsoft Excel databases, one for parents and one for educators. Then data were transferred to SPSS software (IBM corp., v. 23.0.0.0). Quantitative data were analyzed using descriptive statistics. Depending on the part of the questionnaire, results are reported either using frequencies or means and Standard deviations. In terms of the qualitative data, thematic and inductive analysis approaches were employed to analyze qualitative data. Thematic analysis is according to Davis & Dunn (2019, p. 247) a "foundational analytical method designed to identify, represent and report thematic patterns that occur within the data". In this study, frequencies of each code are reported.

Ethical Considerations

The study was approved by the Ethics Committee of the University with which the first author is affiliated. Upon receiving the approval of the Ethics Committee, the first author submitted a request to the Municipality body responsible for childcare centers, in order to get a consent to administer the questionnaires to the ECEC professionals and the parents. Upon receiving the approval from the Municipality Committee, the second author of the study communicated with the principles of the preschool programs to inform them about the study. A general information letter and a consent form was provided to and signed by all participants. Both were providing information about the aim of the study, the voluntary and anonymous nature of the research, as well as their right to choose not to answer any questions, and to withdraw without penalty.

Results

Training, Experience in and Attitudes Towards First Aid

As far as ECEC professionals are concerned, the majority of them (90.4%) have been trained in first aid during their studies. 56.1% of them mentioned that the training they received was both theoretical and practical. Thus, 86.3% of them mentioned that they have been trained in first aid provision during their work. 69.8% of those who have been trained during their work mentioned that this training was both practical and theoretical and 96.9% mentioned that this training was offered by the organization for which they work, for free. As far as parents are concerned, 54.3% of them mentioned that they have been trained in first aid provision. 64.7% of the parents who have been trained in first aid provision, mentioned that the training was both theoretical and practical and 74.5% mentioned that the training was provided by their organization for free.

When asked when was the last time they have been trained in first aid, the majority of ECEC professionals (56.5%) mentioned that they have been trained 2-5 years ago. 18.8% have been trained 1-2 years ago, 10.1% 5-10 years ago, 7.2% have been trained less than a year ago, and another 7.2% have been trained more than 10 years ago. Parents' responses about the time of training, on the other hand, varied considerably. 23.3% mentioned that they have been trained between 5-10 years ago, 22.4% that they have been trained less than a year ago, another 22.4% that they have been trained 2-5 years ago, 19% that they have been trained more than 10 years ago and 12.9% that they have been trained 1-2 years ago.

Of the 30 ECEC professionals who have not been trained in first aid provision, all of them mentioned that they would like to be trained, whereas in terms of parents 98.3% of them mentioned that they would like to be trained. As far as the frequency of training is concerned, 70.5% of ECEC professionals mentioned that they would like to be trained once per year, whereas 57% of the parents mentioned that they would like to be trained once per year, 24.4% every six months and 18.6% once every two years.

Participants were also asked to select the reasons why they have chosen to receive training in first aid. Figure 1 presents the number of ECEC professionals and parents who have selected each of the listed reasons for training.

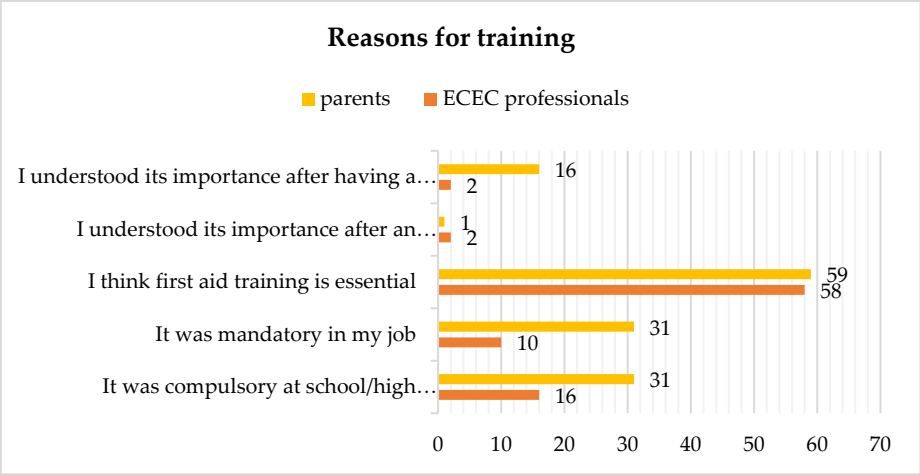

Figure 1. Reasons why ECEC professionals and parents have selected to be trained in first aid provision

In addition, participants were asked about the reasons why they have not chosen to be trained in first aid provision. Figure 2 presents the numbers of ECEC professionals and parents who selected each of the given reasons.

Figure 2. Reasons why ECEC professionals and parents have selected to not be trained in first aid provision

In terms of participants' experience in first aid provision, 58.9% of ECEC professionals mentioned that they have provided first aid during their work. In terms of first aid provision in their family/personal life, 55.6% mentioned that they have never provided first aid in this context. On the other hand, 69.8% of participant parents mentioned that they have not provided first aid in their work and 57.5% that they have not provide first aid in their personal/family life.

Moreover, participants were asked to select the sources of information they use for issues related to first aid provision. Figure 3 presents the number of ECEC professionals and parents who selected each of the given sources of information.

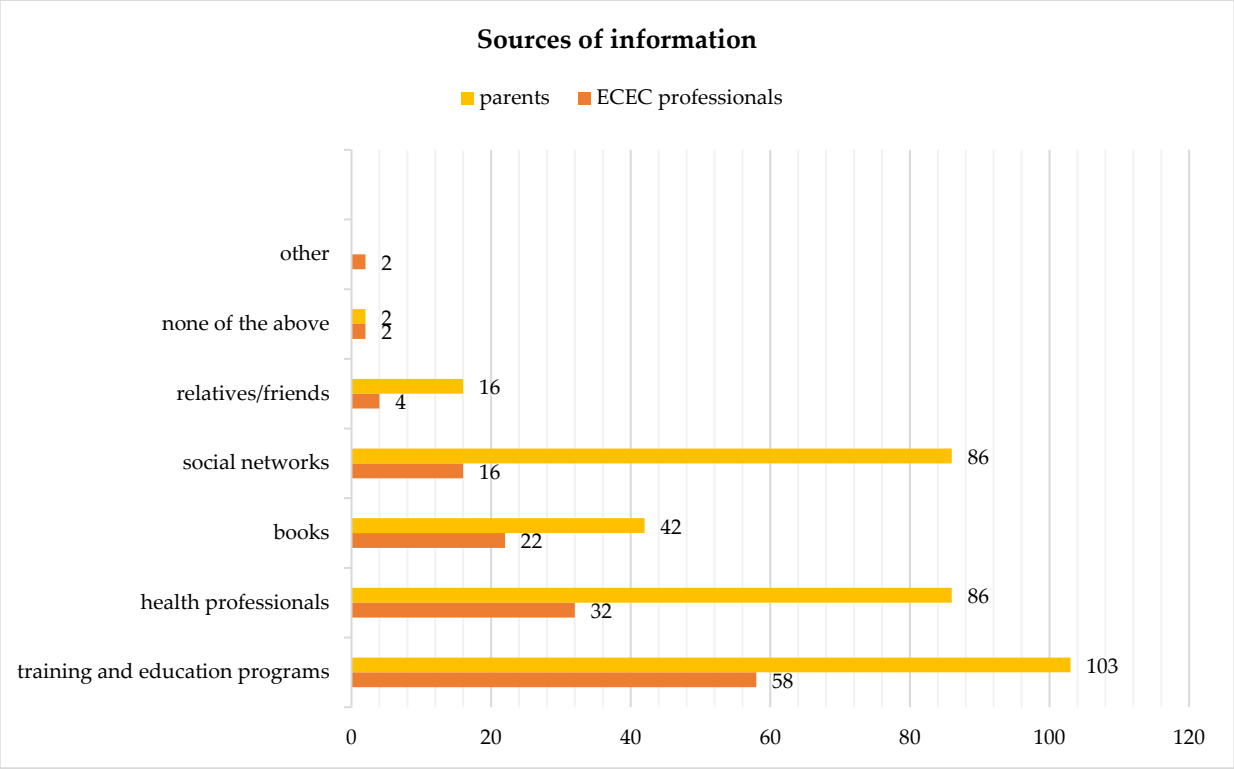

Figure 3. Main sources of information for first aid provision related issues

Turning to participants attitudes towards first aid, 68.5% of ECEC professionals and 77% of parents, completely agree with the statement that training in first aid should be obligatory at school. In addition, 71.2% of ECEC professionals completely agree with the statement that training in first aid should be an obligatory course during university studies for educators/early childhood educators. Table 2 presents ECEC professionals' and parents' attitudes towards first aid, by reporting the responses (yes or no) that received the higher percentage.

Table 2. ECEC professional's and parents' attitudes towards first aid

Attitudes towards first aid	ECEC professionals	Parents
I believe that first aid is relevant only for health personnel or people who have a duty to help	No = 94.6%	No = 92.9%
I believe that those who have children/those who work with children should know first aid	Yes = 58.1%	Yes = 55.9%
I believe that first aid is essential you never know when you will need them	Yes = 71.6%	Yes = 61.5%
I believe that first aid partially substitutes health care	No = 89.2%	No = 88.2%
I believe that everyone should know first aid	Yes = 67.6%	Yes = 87.8%

Frequency of Accidents, Places Where They Occur And Knowledge of Participants in Handling Health Related Issues

Participants were asked to report how frequently a series of accidents occur. Neither at home nor at the preschool settings there are accidents that occur either daily or weekly. At the preschool setting, fever was the only incident which was reported to taking place once or twice per month (M = 3.16; SD = .74). On the other hand, there were no incidents reported by parents as taking place on a monthly basis. Table 3 presents the incidents which received the higher ratings by parents and by ECEC professionals.

Table 3. Incidents that happen more frequently at home and at the preschool

Incident	ECEC program	Home
Fever	3.16 (.74)	2.14 (.61)
Vomiting	2.82 (.75)	1.69 (.59)
Falls	2.62 (1.22)	1.89 (.90)
Stomachache	2.44 (.78)	1.71 (.63)
Bites	2.42 (.95)	1.66 (.73)
Injuries	2.42 (.92)	2.05 (.82)
Bruises	2.23 (.77)	2.10 (.84)
Rash	2.15 (.73)	1.60 (.58)
Headache	1.96 (.79)	2.11 (.94)

* Standard deviations are reported in the parenthesis

In addition, participants were asked to name the places where the majority of accidents occur. As seen in Figure 4, according to parents, most of the accidents inside the house occur in the living room and in the kitchen. Turning to the places outside the house, where most accidents occur, according to parents 54.3% of the accidents occur at the playground, 19.4% at the park and 10.8% at the street. Other places reported include the school (4.8%), the yard (2.7%) and the square (2.2%). Turning to the places where most of the accidents occur at the preschool setting, according to ECEC professionals 35.6% of the accidents occur during children's free play, mainly free play outdoors and 35.2% outside at the yard of the setting.

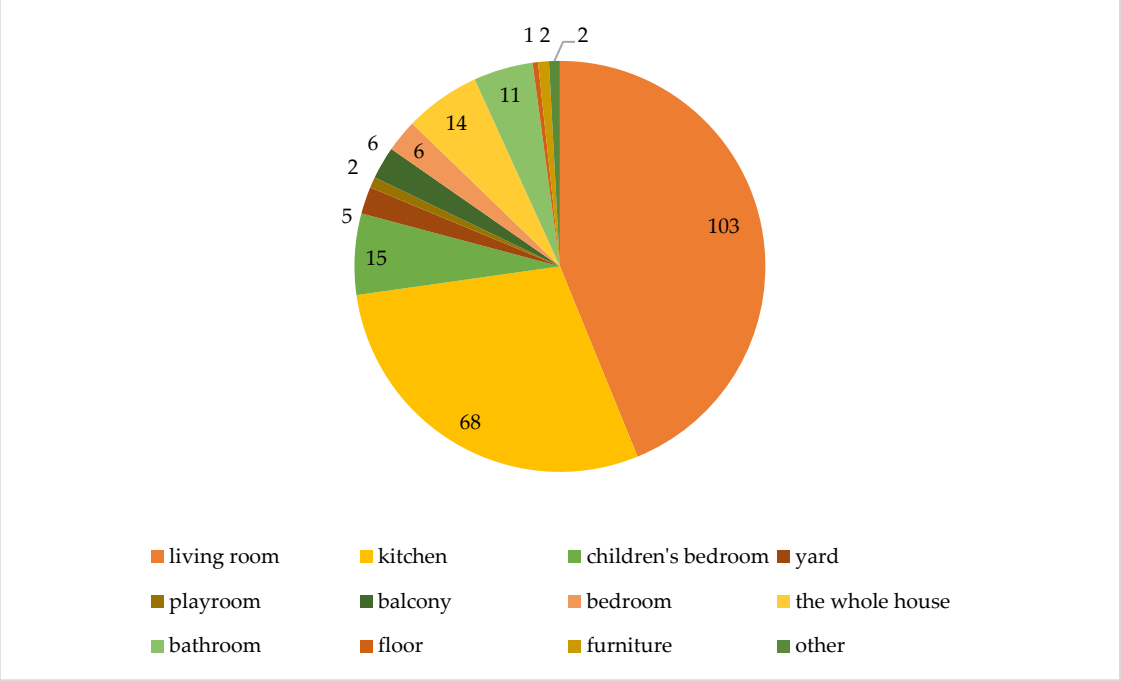

Figure 4. Places where most accidents occur within the house

Finally, participants were asked to indicate the level of their knowledge of handling a series of health-related issues and accidents. Table 4 presents the results. As seen in Table 4, with limited exceptions

the level of knowledge of both parents and ECEC professionals is medium to limited for most of the incidents that were listed. Thus,0 ECEC professionals are, according to their answers, more knowledgeable than parents in handling each of the health-related issues listed.

Table 4. Parents' and ECEC professionals' knowledge of handling health related issues

Health-related issues	Parents			ECEC professionals		
	N	Mean	S.D.	N	Mean	S.D.
Fever and Illness						
Fever	212	3.70	.998	71	3.97	1.02
Vomiting	213	3.32	1.02	72	3.79	1.07
Injuries						
Injuries	212	3.37	1.28	71	3.69	1.11
Falls	212	2.77	1.12	72	3.17	1.12
Sprain	213	2.46	1.21	71	2.65	1.13
Fractures	213	2.01	1.12	72	2.21	1.08
Tooth trauma	213	1.97	1.14	70	2.26	1.04
Head and neck injuries	212	1.79	1.02	72	2.14	1.06
Eye injury	212	1.77	.98	71	2.14	1.00
Dislocation	212	1.77	1.06	70	1.87	.99
Tooth displacement	213	1.69	1.09	72	1.75	.90
Spinal cord inury	212	1.58	.97	71	1.89	1.06
Pains						
Headache	211	3.35	1.09	71	3.42	1.19
Stomachache	213	2.84	1.03	72	3.19	1.13
Tooth pain	213	2.77	1.16	72	2.83	1.07
Pain in the ear	212	2.53	1.15	71	2.73	.99
Bites and stings						
Insect bite	213	3.31	1.06	72	3.65	.98
Bite / sting / contact with marine creatures (eg jellyfish)	213	3.10	1.12	70	3.30	1.06
Rashes	213	2.77	1.22	70	3.16	1.12
Animal / human bite	213	2.29	1.16	72	3.04	1.31
Snake bite	213	1.82	1.09	72	1.97	1.06
Wounds and bleeding						
Bleeding	213	3.07	1.04	72	3.65	.87
Bruises	213	2.99	1.18	72	3.49	1.08
Nose bleeding	213	2.70	1.16	72	3.56	1.11
Nose trauma	211	2.48	1.12	71	3.06	1.10
Tooth bleeding	213	2.11	1.20	71	2.46	.99
Bleeding from the ear	213	1.47	.93	72	1.71	.86
Effects of heat and cold						
Burns	212	2.78	1.15	71	3.08	1.01
Fire in cloths	211	2.38	1.25	72	3.21	1.64
Frostbite	213	1.93	1.14	72	2.08	1.18
Hypothermia	212	1.89	1.19	72	2.40	1.18
Breathing difficulties						
Choking	212	2.67	1.27	72	3.07	.98
Drowning	212	2.38	1.22	72	2.74	1.03
Asthma - difficulty in breathing	213	2.10	1.18	72	2.44	1.07
Allergic reactions						
Allergic reactions	213	2.54	1.16	71	2.93	1.01
Loss and disturbance of consciousness						
Faint	213	2.49	1.18	72	3.00	1.10
Loss of consiousness	213	2.42	1.19	72	2.85	1.05
CPR	212	2.16	1.36	72	2.32	1.04
Convulsions	212	1.70	1.12	72	2.31	1.17
Use of an external defibrillator	212	1.69	1.25	71	1.65	.89
Shock	212	1.61	1.05	70	1.79	.96
Poisoning						

Poisoning by ingestion of food or liquid	212	2.18	1.12	72	2.44	1.01
Poisoning by toxic gases or smoke	212	1.59	.97	72	1.99	1.55
Burns						
Heatstroke	213	1.94	1.16	72	2.44	1.09
Electric shock	212	1.79	1.10	72	2.40	1.07
Chemical burns	213	1.73	1.13	72	1.85	1.01
Chemicals in the eye	213	1.50	.87	72	1.63	.91
Lightning strike	213	1.39	.90	72	1.61	.81
Foreign body						
Foreign body in the nose	213	1.81	1.01	71	2.35	.95
Foreign body in the eye	212	1.79	1.02	72	1.99	1.01
Foreign object in the ear	213	1.55	.88	71	2.11	.99

Conclusion and Discussion

Although unintentional injuries during early childhood are a growing public health problem (WHO, 2008) and despite the fact that those injuries occur in the primary settings in which children participate, that is at home and at the preschool program, limited attention has been given to parents' and ECEC professionals' levels of knowledge of first aid provision. The present study, which is the first, to the best of our knowledge, in Greece aimed at exploring parents' and ECEC professionals' attitudes towards first aid, the levels of their knowledge of first aid provision, as well as the frequency of different types of unintentional injuries and the places where they occur more frequently. Answering those questions is of high importance as, according to Gratz (1994, p. 72), provides an insight about "how epidemiology provides information to create safer environments for children".

As far as participants' attitudes towards first aid is concerned, results of our study suggest that both parents and ECEC professionals have positive attitudes towards first aid. As in the study conducted by Abelairas-Gómez et al. (2020), participants in our study also believe that first aid is not relevant only to health professionals and that everyone should know first aid. In addition, for those parents and ECEC professionals who have been trained the main reason for attending a training was the recognition that first aid training is essential.

Yet, in our study the percentage of ECEC professionals who believe that everyone should know first aid is considerably lower (67.6%) than that of the teachers who participated in the study conducted by Abelairas-Gómez et al. (2020). The discrepancies on the percentages between our results and the results of the study conducted by Abelairas-Gómez et al. (2020) are also true about participants' perceptions on whether first aid training should be obligatory at school and at the university courses. Although parents in our study seem to be positive about first aid training, confirming previous research results (Al-Johani et al., 2018; Bánfai et al., 2015; Thein et al., 2005), the percentage of parents who believe that those who have children should know first aid is relatively low (55.9%). Kamel et al. (2014) in their study found that 77% of participating mothers believed that mothers should know first aid. ECEC professionals who participated in the study also have positive attitudes towards first aid, confirming previous research results (Ganfure et al., 2018; Ilha et al., 2021; Li et al., 2012; Sönmez et al., 2014; Yürümez et al., 2007). Yet as with parents, the percentage of ECEC professionals who believe that those who work with children should know first aid is relatively low (58.1%).

In addition, results indicate that even those who have not been trained in first aid have positive attitudes as most parents and all ECEC professionals mentioned that they would like to be trained in first aid. The main reasons for which most parents and ECEC professionals have not been trained was that the have not thought about it, they do not know where they can find a course to attend and the lack of time. This result highlights the need for first aid training and other health community organizations to run campaigns about the importance of first aid provision and publicize further first aid training courses. In addition, a collaboration among health-related organizations and preschool programs would further enhance parents' knowledge both about the importance of being trained in first aid, as well as about

available training courses in the community. The importance of the first aid training and education programs is also highlighted by the fact that the majority of parents and ECEC professionals who participated in the study mentioned that they use those programs as a primary source of information about first aid provision related issues. Health professionals and social networks are also used by parents and ECEC professionals as a source of information. This result is in line with the results of the study conducted by Bánfai et al. (2015) who also found that first aid courses, the media and health professionals are the primary source of information for parents, whereas the importance of the social networks and friends/relatives has been highlighted by other studies too (e.g. Anwar et al., 2021; Kamel et al., 2014; Vincenten et al., 2005). On the other hand, other studies have found that the primary source of information are mass and social media (e.g. Alhajjaj et al., 2021; Al-Johani et al., 2018; Anwar et al., 2021; Thein et al., 2005; Vincenten et al., 2005). Turning to ECEC professionals, previous studies have found that their primary sources of information are health professionals, the media, health institutions and driving courses (Ganfure et al., 2018; Sönmez et al., 2014).

Turning to participants' training and experience in first aid provision, as far as parents are concerned the slight majority of them (54.3%) have been trained in first aid. Thus, for most of them the training took place between 2 to 10 years before the study run. In addition, according to parents most of them have not provided first aid at work or at home. Our results partly confirm results of previous studies, as in some studies the vast majority of parents have not attended first aid courses (e.g. Alhajjaj et al., 2021; Al-Johani et al., 2018; Bassam, 2022) whereas in other studies the majority of the parents had attended first aid training (e.g. Bánfai et al., 2015). Thus, as in the study conducted by Al-Johani et al. (2018) the training that parents attended had both a theoretical and practical component. Yet our results confirm the results of previous studies in terms of parents' knowledge to handle different incidents that require first aid provision. Specifically, the average score of parents' knowledge to handle the incidents that were listed is 2.28, that is little knowledge. Other researchers (Alhajjaj et al., 2021; Al-Johani et al., 2018; Bassam, 2022; Nageh et al., 2020; Thein et al., 2005) have also found that parents have improper knowledge regarding first aid provision.

Turning to ECEC professionals' experience and training in first aid, results showed that most of the participants have been trained and that training took place 2 to 5 years before the study was conducted. This finding aligns with the findings of the study conducted by Abelairas-Gómez et al. (2020) and by Yürümez et al. (2007) who also found that the training that their participants received had taken place more than 2 years ago. Thus, for most of the ECEC professionals the training had a practical and theoretical component, and the training was provided by their organization. Previous studies however have found that the training that professionals have received was theoretical rather than practical (Yürümez et al., 2007). In addition, the majority of the participants have provided first aid either at home (55.6%) or at work (58.9%). Sönmez et al. (2014) and Ganfure et al. (2018) also found that most of the participants in their study confronted with a situation where first aid provision was required in their professional life.

However, despite the fact that the majority of the participants have been trained in first aid provision, the level of their knowledge in handling different situations is low to moderate (2.61). This result is substantiated by previous research results which have also shown that although ECEC professionals have encountered situations that required the provision of first aid they are not adequately knowledgeable to handle such situations (Abelairas-Gómez et al., 2020; Ganfure et al., 2018; Li et al., 2012; Yürümez et al., 2007).

Given that in Greece there are few data on children's accidents, the present study aimed also to map the most frequent types of accidents that occur at home and at the preschool setting. Fever, vomiting and falls have been reported as the three most common incidents that occur at the preschool program, whereas parents reported that the three most common incidents that occur at home are fever, headache, and bruises. Our results partly confirm previous results as according to other studies the most common types of injuries that happen during early childhood are falls, burns, drowning, chocking, cuts and wounds (Bánfai et al., 2015; Ellsäßer, 2017; Kamel et al., 2014; Nageh et al., 2020). Turning to the places where most of the accidents

happen, the living room and the kitchen are the most common places within the house, whereas the playground is the most common place outside the house. On the other hand, at the preschool setting most of the accidents occur outdoors primarily during children's free play.

Although the results of our study provide a picture of parents' and ECEC professionals' attitudes towards first aid, as well as about their knowledge and needs, it is important for future studies to address with larger samples these questions, as according to Abelairas-Gómez et al. (2020, p. 273) "it is necessary to establish ''what the population knows'' in order to identify ''what it needs to learn'' and determine ''what'' needs to be taught and ''how''. In addition, both the results of our study and previous studies are discouraging in relation to preschoolers' parents' and ECEC professionals' preparedness to handle unintentional injuries, despite the fact that they are so frequent during early childhood. It is highly recommended therefore for health and education organizations to cooperate (Góes et al., 2023; Sönmez et al., 2014) in order to establish a national mandatory first aid training program and in-service training programs which will aim at providing frequent trainings both to parents and ECEC professionals, in order both to enhance and to rephrase their knowledge. This is especially necessary for ECEC programs, as in Greece there are school nurses in schools from primary onwards but not in ECEC programs. Given that there are not health professionals in ECEC programs, and the high percentages of accidents during early childhood, it is important for at least one staff member to be certified in first aid provision. Providing new knowledge is not enough as first aid provision is a course offered by the universities that trained ECEC professionals.

The effects of training have been revealed by previous studies that have implemented intervention programs both with ECEC professionals and with mothers (Calandrim et al., 2017; Ilha et al., 2012; Kahriman & Karadeniz, 2018; Lee & Oh, 2018) and found that such programs enhance participants' knowledge and confidence to handle unintentional injuries and also their ability to identify safety hazards.

The fact that both in our study and in previous studies (e.g. Sönmez et al., 2014) participants have been trained in first aid but their knowledge was minimum has many implications both about the frequency of training as well as about the quality of the training. First of all, it is important to run frequent training courses in order for professionals and parents to gain confidence and to refresh their knowledge frequently. In addition, the quality of the training, either provided at school, at the university or by other organizations, needs to be carefully examined. Adult education principles and a practical component should be the main characteristics of the training. In addition, in order to be effective, the training should include, according to Sönmez et al. (2014, p. 244-245) "visuals, applications, question-answer techniques and methods and small group exercises".

The intersectoral cooperation between health and education organizations it is necessary not only for training in first aid but also for sensitizing both parents and ECEC professionals about the serious consequences of unintentional injuries during early childhood, as well as about safety precautions that need to be taken both at home and the preschool. According to Góes et al. (2023, p. 92) the goal is to "expand the specific actions of promotion, prevention, and health care, including the reduction of morbidity and mortality due to accidents in the context of early child rearing". In order to increase awareness about the importance of first aid training and safety hazards during early childhood, other types of interventions can also be beneficial. For example, television clips (Yürümez et al., 2007), mass media clips (Bassam, 2022; Yürümez et al., 2007) and counseling (Bassam, 2022) have also been found to be effective. Moreover, children's training in safety and first aid is also important as according to research results (e.g. Bollig et al., 2011) children as young as 4 to 5 years are able to learn and apply basic first aid.

To conclude; given the high rates of unintentional injuries during early childhood it is important to explore if parents and ECEC professionals have adequate knowledge to handle such injuries. The present study has revealed that both participants who have been trained in first aid provision and those who have not received training in the past have positive attitudes towards first aid and believe that first aid training should be addressed to the whole community and not only to health professionals. This finding is in line with previous research results. Yet, the results revealed that the percentages of professionals who believe

that everyone should know first aid are lower than in other studies. In addition, in Greece fewer parents and professionals believe that those who have children and/or work with children should have first aid knowledge, as compared to parents and professionals in other countries.

The study has also revealed that the reasons why participants have not been trained in first aid include that they have not thought about it, they do not know where they can be trained, and they lack time. Those barriers to first aid training highlight the need raise awareness about the importance of having first aid knowledge, especially among professionals who work with preschoolers and preschoolers' parents. Health related services and the Ministry of Health and Education could run campaigns to raise awareness. In addition, first aid training should be incorporated in curricula, across education levels. In order to combat barriers related to time constraints it would be advisable to provide training during working hours, in the context of ones' working place. In addition, given that the present study found that although the slight majority of the participants have been trained, they still have little knowledge on how to handle incidents that can occur both at home and at school, it is important to reconsider both the content and the frequency that it is provided.

Given that this is the first, to the best of our knowledge, study in Greece exploring the attitudes and knowledge of ECEC professionals' and preschoolers' parents towards first day, it is important to conduct further studies on this issue. Although the results of the present study give a picture of the epidemiology of early childhood injuries in Greece, the sample is small and the results cannot be generalized. Future studies should collect data from larger samples as well from different regions of the country.

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