Research Article / Özgün Araştırma

DOI: 10.4274/cayd.galenos.2025.52385
J Pediatr Emerg Intensive Care Med

Short First-aid Training Improves Parental Knowledge of Pediatric Head Trauma: A Pilot Study

Kısa İlk Yardım Eğitimi Ebeveynlerin Pediyatrik Kafa Travması Bilgisini Artırıyor: Pilot Çalışma

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Abstract

Introduction: Pediatric head trauma is one of the leading causes of emergency visits and can result in serious complications. Parents, often the first responders in such situations, generally lack adequate knowledge of appropriate first-aid. Educational interventions may help bridge this gap and improve emergency preparedness. This study aimed to evaluate the effectiveness of a short-duration first-aid training program in improving parents' knowledge of pediatric head trauma.

Methods: A pre-test-post-test interventional design was used to assess the effectiveness of first-aid training. The study was conducted among 101 parents at a primary healthcare center in Türkiye. Participants received a 15-minute structured first-aid training focused on the signs and symptoms of pediatric head trauma and on appropriate emergency responses. A 13-item knowledge questionnaire was administered before and after the training. Data were analyzed using paired samples and independent-samples t-tests, as appropriate.

Results: The mean total knowledge score increased significantly from 10.47±1.54 (pre-test) to 11.81±1.52 (post-test) ($p<0.001$). The effect size (Cohen's d =0.88) indicated a strong impact. Comparison of sociodemographic characteristics and average knowledge scores between groups showed statistical significance ($p<0.001$). Parents of children who had experienced head trauma or emergency department visits exhibited notably higher post-test scores.

Conclusion: Short, structured first-aid training significantly improves parental knowledge of pediatric head trauma. Incorporating such programs into routine pediatric and community health services may enhance early recognition and response to head injuries.

Öz

Giriş: Pediyatrik kafa travması acil servis ziyaretlerinin önde gelen nedenlerinden biridir ve ciddi komplikasyonlara yol açabilir. Genellikle bu gibi durumlarda ilk müdahale bulunan bireyler ebeveynler olduğu için, doğru ve etkili bir ilk yardım konusunda yeterli bilgiye sahip olmaları önemlidir. Eğitimsel müdahaleler bilgi boşluğu kapatmaya ve acil durum hazırlığını iyileştirmeye yardımcı olabilir. Bu çalışma, ebeveynlerin pediyatrik kafa travması hakkındaki bilgilerini artırmada kısa süreli bir ilk yardım eğitim programının etkinliğini değerlendirmeyi amaçlamaktadır.

Yöntemler: İlk yardım eğitiminin etkinliğini değerlendirmek amacıyla ön-test-son-test müdahale tasarımı kullanıldı. Çalışma, Türkiye'deki bir birincil sağlık merkezinde 101 ebeveyn ile yürütüldü. Katılımcılar, pediyatrik kafa travmasının belirtileri, semptomları ve uygun acil müdahalesine odaklanan 15 dakikalık yapılandırılmış bir ilk yardım eğitimi aldılar. Eğitimden önce ve sonra 13 maddelik bir bilgi anketi uygulandı. Veriler bağımsız örneklem t-testi, eşleştirilmiş t-testi ve etki büyüklüğü hesaplamaları kullanılarak analiz edildi.

Bulgular: Ortalama toplam bilgi puanı 10,47±1,54'ten (ön-test) 11,81±1,52'ye (son-test) önemli ölçüde arttı ($p<0,001$). Etki büyüklüğü (Cohen'in d =0,88) güçlü bir etki gösterdi. Sosyodemografik özellikler ile bilgi puan ortalamalarının gruplar arası karşılaştırılması istatistiksel olarak ileri düzeyde anlamlılık gösterdi ($p<0,001$). Kafa travması veya acil servis ziyaretleri yaşayan çocukların ebeveynleri test sonrası belirgin şekilde daha yüksek puanlar gösterdi.

Sonuç: Kısa, yapılandırılmış ilk yardım eğitimi ebeveynlerin pediyatrik kafa travması hakkındaki bilgisini önemli ölçüde yükseltti. Bu tür programların rutin pediyatrik ve toplum sağlık hizmetlerine dahil edilmesi, kafa yaralanmalarına erken tanı ve müdahaleyi

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Received/Geliş Tarihi: 21.06.2025 **Accepted/Kabul Tarihi:** 19.11.2025 **Epub:** 25.02.2026
Cite this article as: Sögüt S, Delibaş H, Ünal Z. Short first-aid training improves parental knowledge of pediatric head trauma: a pilot study. J Pediatr Emerg Intensive Care Med. [Epub Ahead of Print]

Abstract

Future programs should combine theoretical and hands-on training to reinforce learning and address persistent knowledge gaps. Integrating such interventions into primary healthcare services and parental education will enhance community preparedness and empower parents to respond effectively to pediatric emergencies.

Keywords: First-aid, parental knowledge, parental training, pediatric head trauma

Öz

artırabilir. Gelecekteki programlar, öğrenmeyi pekiştirmek ve kalıcı bilgi eksikliklerini gidermek için teorik ve uygulamalı eğitimi birleştirmelidir. Bu tür müdahalelerin birincil sağlık hizmetlerine ve ebeveyn eğitimine entegre edilmesi, toplumun hazırlığını artıracak ve ebeveynlerin pediyatrik acil durumlara etkili bir şekilde müdahale etmelerini sağlayacaktır.

Anahtar Kelimeler: İlk yardım, ebeveyn bilgisi, ebeveyn eğitimi, pediyatrik kafa travması

Introduction

Head trauma is a leading cause of emergency department visits and mortality among young children, accounting for 39.7% of pediatric traumatic injuries.[1,2] The Centers for Disease Control and Prevention report that 7.0% of children aged 3-17 experience a serious head injury.[3] The percentage of children suffering a significant head injury increases with age and is almost three times higher in children aged 15-17 (11.7%) than in children aged 3-5 (4.0%).[3] In addition, head trauma causes 600.000 emergency department visits and 7.400 deaths among children under 18 years of age each year worldwide.[4] The mortality rate due to traumatic brain injury (TBI) is higher in children under 4 years of age than in those aged 5-14 years; the annual mortality in the younger group is 5 per 100.000 children.[5-7]

A head trauma of the same severity can lead to worse outcomes in children than in adults.[8,9] It has been reported that even in children without obvious neurological deficits resulting from head trauma, impairments in academic performance, attention, concentration, memory, and executive functions may be observed, and some of these symptoms may appear only months or years after the initial injury.[2,5,7-9] Therefore, it is not possible to know when, where, or how these traumas, which can significantly affect the lives of children and their parents, may occur. For this reason, it is important that parents, who spend most of their time with their children, know appropriate approaches and first-aid interventions in the event of any accident or injury, including head trauma.[10,11] However, no study in the literature specifically addresses how parents can administer first-aid to their children who have sustained head trauma. Given that early and appropriate first-aid interventions can prevent complications, parental education is a key component of pediatric emergency preparedness.

Nurses play a critical role in educating caregivers about pediatric emergencies, including head trauma. However, structured first-aid training programs are not widely implemented in clinical practice. This study aims to bridge this gap by evaluating the impact of a first-aid training program for parents on their knowledge of pediatric head trauma.

Hypothesis of the Research

H_1: First-aid training significantly improves parents' knowledge regarding pediatric head trauma.

Materials and Methods

Study Design and Participants

The study was conducted from November 2023 to May 2024 at a primary health care institution in Türkiye. A pre-post test interventional design was used to assess the effectiveness of first-aid training. To determine the required sample size, an a priori power analysis was conducted using G*Power 3.1 software. With an effect size of 0.5, an alpha of 0.05, and 80% power, a minimum of 88 participants were required. To allow for potential dropouts, 101 participants were included to ensure sufficient statistical power.

The inclusion criteria were:

- Being the parent or primary caregiver of a child under 18 years old.
- Being able to read and write in Turkish.
- Willingness to participate and provide informed consent.

Exclusion criteria included parents who had formal first-aid training or those with medical backgrounds (e.g., healthcare professionals).

Ethical Approval

The study was carried out in accordance with the Declaration of Helsinki. Ethics committee approval for this research was obtained from the Hitit University Non-Interventional Research Ethics Committee (approval no: 2023-17, date: 01.11.2023).

Strengths of Study

This study contributes to the limited body of literature on first-aid training for parents specifically focused on pediatric head trauma. Its strengths lie in targeted intervention design, structured training, and pre- and post-test evaluations with measurable outcomes. The inclusion of sociodemographic subgroup analyses deepens understanding of which parental groups may benefit most from such training. Although similar studies have examined general first-aid education, this study makes a novel contribution by addressing a high-risk, high-impact topic in pediatric emergency care in a community-based setting. Furthermore, ensuring the validity of the survey forms and, in the future, developing them into a scale could be considered important methodological contributions.

Implementation of the Study

The first-aid training was developed based on the recommendations of the European Resuscitation Council First-aid Guidelines.[12] Consent was obtained from parents who presented to the primary health care center for reasons such as vaccination or treatment, to ascertain their willingness to participate in the study. The training included:

- A 15-minute interactive session led by a certified first-aid instructor. The training was intentionally designed as a 15-minute intervention to ensure feasibility and accessibility within primary health care settings, where parents often have limited time. Similar short-format educational models have been shown to improve caregivers' knowledge of first-aid topics.[10,11] This duration was therefore considered both practical and sufficient for delivering essential first-aid information on pediatric head trauma.
- Visual educational poster detailing signs, symptoms, and immediate actions for head trauma.
- Q&A session where parents could ask clarifying questions.

Participants completed a pre-test before the training and a post-test immediately after.

Data Collection Instruments

The study utilized a self-administered questionnaire, which included:

- A demographic information form (age, education, prior knowledge of first-aid, history of child head trauma, etc.).
- A 13-item head trauma first-aid knowledge test (true/false format) was developed based on existing literature.[7,11] To determine the parents' knowledge levels regarding first-aid for head trauma, responses were scored as 1 point for a correct answer and 0 points for an incorrect answer.

Validity and Reliability

Content validity was ensured by an expert panel of two emergency physicians, two pediatricians, and two first-aid instructors. A pilot study involving 10 parents was conducted, and the questionnaire was revised for clarity. Cronbach's alpha coefficient for the knowledge test was 0.78, indicating acceptable reliability.

Statistical Analysis

Data were analyzed using SPSS 21.0. The distribution of the data was assessed using the Shapiro-Wilk test, which indicated a normal distribution. Therefore, parametric tests were used in the analyses. Descriptive statistics were summarized as the mean, standard deviation, and minimum and maximum for numerical variables, and as number and percentage (%) for categorical variables. To compare mean scores, the paired t-test was used for within-group comparisons (before and after training), and the independent-samples t-test (for two groups) and one-way analysis of variance (for three or more groups) were used for between-group comparisons across sociodemographic characteristics. Effect size (r) was evaluated according to Cohen's (1988) classification: r=0.1 (small), r=0.3 (medium), r=0.5 (large). Statistical significance was set at $p<0.05$. Additionally, subgroup analyses were conducted to examine the impact of child-related variables (e.g., trauma history, gender, emergency room visit status) on parental awareness. These variables were included in the analysis because they are among the factors reported in the literature as influencing parental awareness and first-aid responses.

Results

In the study, the mean total knowledge score of parents regarding first-aid for head trauma was found to be 10.47±1.54 before the training and 11.81±1.52 after the training. The effect size (Cohen's d =0.88) indicated a strong effect. The comparison of the mean scores before and after was highly significant ($p<0.001$; Figure 1).

Table 1 presents a comparison of pre-test and post-test knowledge scores by sociodemographic variables. The mean age of the parents was 29.3±6.0 years; the majority were mothers (94.1%), were married (97.0%), and had at least a high school education (67.4%). Most participants were unemployed (70.3%) and lived in nuclear families (89.1%). The training significantly improved knowledge scores across all sociodemographic subgroups ($p<0.001$; Table 1).

Table 2 presents the relationship between children's head trauma history and parents' first-aid knowledge scores. Overall, 31.7% of parents reported that their child had previously experienced head trauma, most commonly due to falls from a height (90.6% of cases). The mean age of affected children was 2.9±1.8 years, and 51.5% were male. The training significantly improved knowledge scores in all subgroups ($p<0.001$ for all within-group comparisons). Additionally, parents whose children had experienced head trauma had higher post-test scores (12.16±1.09) compared with those whose children had not (11.63±1.67), although the difference did not reach statistical significance ($p>0.05$). Notably, parents who previously sought emergency care for head trauma had significantly higher post-test scores ($p=0.049$). Similarly, parents of male children who had sustained head trauma scored significantly higher on the post-test compared with parents of female children who had sustained head trauma ($p=0.001$; Table 2).

The comparison of item score averages for parents' knowledge of first-aid for head trauma before and after the training is shown in Table 3. Average total correct answer scores for parents' knowledge of first-aid for head trauma increased in most cases, compared with before the intervention. However, the comparison of item score averages for items 1, 3, 4, 6, 7, 10, and 12 was found to be statistically significant ($p<0.05$; Table 3).

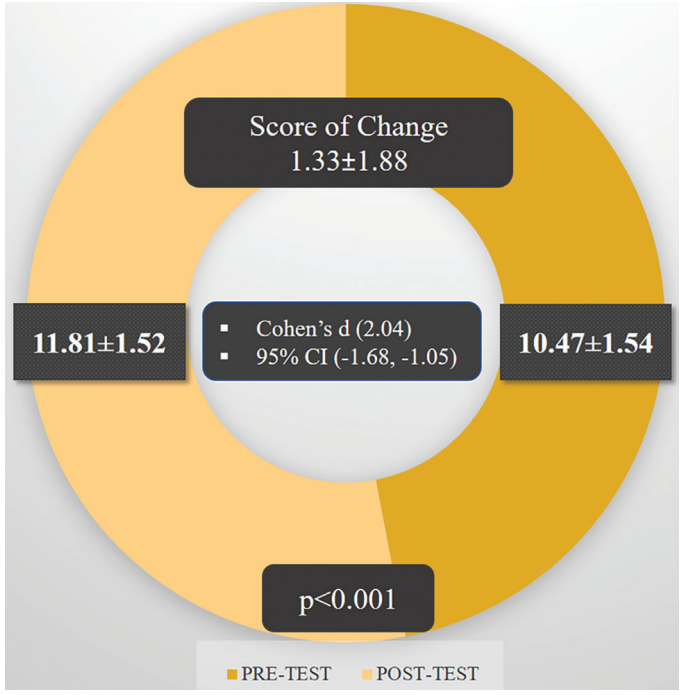

Figure 1. Comparison of parents' total knowledge score averages regarding first-aid in head traumas
CI: Confidence interval

Table 1. Sociodemographic characteristics of parents and comparison of knowledge scores before and after training (n=101)

Descriptive characteristics	X̄ ± SD	Min-max	Pre-test		Post-test		Test/p-value[b]
			X̄ ± SD	Test/p-value[a]	X̄ ± SD	Test/p-value[a]	
Parent's age	29.31±5.98	18-45	10.47±1.54	2.379 **<0.001**	11.81±1.52	2.831 **<0.001**	-29.698 **<0.001**
Child's age	5.05±5.10	0-18	10.50±1.37	2.379 **<0.001**	11.50±1.04	1.402 **0.039**	9.803 **<0.001**
	n	**%**					
Participating parent							
Mother	95	94.1	10.45±1.55	-0.583 0.561	11.75±1.55	-1.420 0.159	61.014 **<0.001**
Father	6	5.9	10.83±1.47		12.66±0.51		
Level of education							
Primary school	16	15.8	10.62±0.31	0.192 0.965	12.18±0.83	1.572 0.176	37.649 **<0.001**
Secondary school	20	19.8	10.20±2.09		12.00±1.58		
High school	32	31.8	10.46±1.50		11.96±1.30		
Associate degree	16	15.8	10.56±1.36		10.87±2.02		
Undergraduate	17	16.8	10.56±1.45		11.81±1.68		
Marital status							
Single	3	3.0	10.66±0.57	0.217 0.829	12.33±0.57	0.598 0.551	54.803 **<0.001**
Married	98	97.0	10.46±1.56		11.79±1.54		
Working status							
Working	30	29.7	10.80±1.76	1.378 0.171	11.96±1.42	0.660 0.511	52.708 **<0.001**
Not working	71	70.3	10.33±1.43		11.74±1.57		

Table 1. Continued

Descriptive characteristics	X̄ ± SD	Min-max	Pre-test		Post-test		Test/p-value[b]
			X̄ ± SD	Test/p-value[a]	X̄ ± SD	Test/p-value[a]	
Income level							
Income is less than my expenses	19	18.8	10.63±1.37	0.120	12.00±0.81	0.530	51.210 **<0.001**
Income is equal to my expenses	67	66.3	10.43±1.60	0.887	11.83±1.57	0.590	
Income is more than my expenses	15	14.9	10.46±1.59		11.46±1.99		
Family type							
Nuclear family	90	89.1	10.48±1.54	-0.021	11.84±1.46	0.671	58.636 **<0.001**
Traditional (extended) family	11	10.9	10.50±1.64	0.983	11.50±2.12	0.504	
Total number of children							
1	52	51.5	10.84±1.30	3.654	11.67±1.58	0.583	9.160 **<0.001**
2	28	27.7	10.25±1.48	**0.029**	11.85±1.79	0.560	
3 and above	21	20.8	9.85±1.95		12.09±0.88		
Total number of people living in the house							
3	45	44.6	10.81±1.34	0.911	11.79±1.48	1.000	38.546 **<0.001**
4	28	27.6	10.32±1.46	0.477	12.10±1.37	0.422	
5	24	23.8	10.12±2.00		11.70±1.45		
6 and above	4	4.0	10.50±0.57		10.50±3.10		
Place of residence							
Province	97	95.0	10.41±1.54	-1.698	11.77±1.55	-0.933	50.817
District	4	4.0	11.75±1.25	0.093	12.50±0.57	0.353	**<0.001**
Child has chronic disease							
Yes*	96	95.0	10.43±1.56	-1.076	11.81±1.56	0.018	61.572
No	5	5.0	11.20±1.09	0.285	11.80±0.44	0.986	**<0.001**

[a]: Independent sample t-test for pairwise comparisons, ANOVA for three or more comparisons, [b]: Paired t-test; statistical significance: p<0.05, *: heart: n=3; eye: n=1; asthma: n=1; kidney: n=1; epilepsy: n=1, Marshall syndrome: n=1; immunodeficiency: n=1, SD: Standard deviation

Table 2. Distribution of children's head trauma history and parents' knowledge of first-aid in head trauma

Items	n	%	Pre-test		Post-test		Test/p-value[b]
			X̄ ± SD	Test/p-value[a]	X̄ ± SD	Test/p-value[a]	
Child has head trauma							
Yes	32	31.7	10.74±1.26	-1.225	12.16±1.09	-1.594	52.061
No	69	68.3	10.33±1.65	0.224	11.63±1.67	0.114	**<0.001**
Number of head injuries the child has had since birth	**Mean ± SD** 1.27±0.73		10.36±1.43	0.270 0.788	12.54±0.93	-1.746 0.084	52.840 **<0.001**
Cause of head trauma							
Fall from height (such as balcony, bed, window)	29	90.6	10.86±1.24	1.490	12.13±1.12	0.374	38.871 **<0.001**
Accident/injury with a motorbike	3	9.4	9.50±2.12	0.242	12.50±0.07	0.691	
Age of the child at the time of the trauma	**Mean ± SD** 2.93±1.83		10.66±1.22	0.000 1.000	12.33±0.81	-1.859 0.086	19.550 **<0.001**
Gender of traumatized child							
Female	15	48.5	10.62±1.20	-0.833	11.56±1.26	-3.487	40.775 **<0.001**
Male	17	51.5	11.00±1.36	0.411	12.70±0.46	**0.001**	
Knowing first-aid for head trauma							
Yes	12	11.9	10.50±1.54	0.536	11.50±1.73	0.752	58.865 **<0.001**
No	89	88.1	10.25±1.60	0.593	11.85±1.50	0.454	
Emergency room visit due to head trauma							
Yes	25	24.8	10.80±1.22	-1.213	12.32±1.02	-1.970	59.643 **<0.001**
No	76	75.2	10.36±1.63	0.228	11.64±1.63	**0.049**	

Table 2. Distribution of children's head trauma history and parents' knowledge of first-aid in head trauma

Items	n	%	Pre-test		Post-test		Test/p-value[b]
			$\bar{X}$ ± SD	Test/p-value	$\bar{X}$ ± SD	Test/p-value	
Hospitalization for head trauma							
Yes	3	3.0	11.33±0.57	-0.975 0.332	13.0±0.0	-1.373 0.173	61.668 **<0.001**
No	98	97.0	10.44±1.56		11.77±1.53		

[a]: Independent sample t-test for pairwise comparisons, ANOVA for three or more comparisons, [b]: Paired t-test; statistical significance: p<0.05, SD: Standard deviation

Table 3. Parents' first-aid knowledge item score means in head trauma

Items	Pre-test	Post-test	Score of change	p-value[a*]
1. If my child loses consciousness after receiving a blow to the head, I think it is a head injury.	0.93±0.25	0.99±0.09	0.05±0.27	**0.033**
2. If my child vomits forcefully when he/she is struck on the head, I think he/she has a head injury.	0.99±0.09	0.98±0.14	0.00±0.17	0.566
3. If my child sustains a blow to the head with resulting swelling, I would consider it a head injury.	0.85±0.35	0.95±0.21	0.09±0.36	**0.007**
4. If my child sustains a blow to the head and a black-and-blue discoloration is present under the eye and behind the ear, I would suspect a head injury.	0.79±0.40	0.89±0.31	0.09±0.45	**0.032**
5. If my child utters meaningless words after he/she sustains a blow to the head, I would suspect that he/she has a head injury.	0.95±0.21	0.94±0.23	0.00±0.22	0.657
6. If my child makes sounds such as crying or moaning when he/she receives a blow to the head, I would suspect he/she has a head injury.	0.69±0.46	0.83±0.37	0.13±0.46	**0.004**
7. If my child has a blow to the head and there are any broken bones or bleeding in the head, I apply pressure directly to the area with a cloth.	0.23±0.47	0.67±0.47	0.43±0.60	**<0.001**
8. If my child experiences a blow to the head and, within 48 hours, develops any of the following: a headache; pain in the neck or back; tingling or loss of sensation in the hands and fingers; or fluid discharge from the nose or ears, I consider the child to have a head injury.	0.93±0.25	0.96±0.19	0.02±0.33	0.368
9. If I suspect that my child has sustained a head injury, I immediately call 112 and avoid moving him/her.	0.98±0.14	0.96±0.19	0.01±0.19	0.320
10. In the event of a fall from a height or from a bicycle, I try to lift my unconscious child from where he/she is and take him/her to the hospital as quickly as possible.	0.58±0.49	0.85±0.35	0.26±0.52	**<0.001**
11. In cases of falls, such as from a height or from a bicycle, I immediately call 112 and ensure that my child does not move, even if he or she is conscious.	0.91±0.28	0.96±0.19	0.04±0.32	0.132
12. In the event of a fall from a height, such as from a bicycle, if the accident area is dangerous and my child needs to be moved, I carry my child upright by dragging him/her without shaking her.	0.67±0.47	0.83±0.37	0.15±0.41	**<0.001**
13. If my child falls from a height or from a bicycle, and there is danger at the accident site requiring that my child be carried, I ensure the head-neck-body axis is maintained during transport and remains immobilized until the call arrives.	0.95±0.21	0.99±0.09	0.03±0.24	0.103

[a]: Paired t-test, [*]: Statistically significant p<0.05

Discussion

Although awareness and prevention efforts aimed at reducing head trauma have increased in recent years, it remains one of the major health problems among children.[3] Parents, as the primary caregivers responsible for creating a safe environment and responding to injuries, play a critical role in both prevention and early intervention.[13] However, most parents are unaware of their need for first-aid training until they are invited to attend structured educational programs, which are often organized and led by nurses. In this study, a pediatric nurse-led training program focusing on first-aid for pediatric head trauma was implemented, and its impact on parents' knowledge levels was evaluated.

When children experience accidents, their parents are typically the closest caregivers. Therefore, it is crucial for parents to possess a high level of basic first-aid knowledge and practical skills to prevent mortality and morbidity. In the study, 94.1% of the participating parents were mothers. This finding is consistent with several studies in the literature[10,11,14,15] which indicate that mothers are the primary caregivers in most societies. These results underscore the importance of prioritizing mothers in accident-prevention initiatives and in the development of first-aid training programs.

Consistent with Hughes et al.[16] this study found that short-distance falls, including falls from couches, beds, or a standing position, were the primary cause of head trauma in children. Although rates varied across studies, falls were consistently identified as the most common cause of head trauma, particularly in children aged 0-4 years.[2,17,18] The mean age of the children who sustained head trauma in the study was consistent with previous research.[19-21] The higher prevalence in young children is likely attributable to their increased curiosity, incomplete physical and cognitive development, and inadequate parental supervision. Furthermore, anatomical factors such as larger head-to-body ratios, incomplete brain myelination, and open cranial sutures increase their susceptibility to head trauma.[22,23] From a clinical and public health perspective, these results highlight the urgent need for targeted fall prevention interventions and parental supervision strategies, particularly for toddlers and preschool-aged children. In addition, the higher rate of head trauma among boys than among girls, as observed in this study, is consistent with findings in the literature.[3,17,20,21,24] The higher frequency of head trauma in boys may be attributed to parents' greater provision of preventive care to girls and to boys' greater propensity for risky, physically active play.

It is important for parents to be familiar with quick and effective first-aid practices to ensure their children's safety. However, many studies have shown that parents' first-aid knowledge and practices are inadequate.[25-31] Compared to these studies, the majority of parents in our study reported a lack of knowledge about first-aid for head injuries, which is not surprising. These findings highlight the need for targeted first-aid training programs specifically tailored to pediatric head trauma. In addition, head trauma is a leading cause of emergency department visits among young children.[17,32] In the study, fewer than half of the parents of children with head trauma sought emergency care. This may be because parents fail to recognize head injury symptoms or perceive them as minor.

The literature shows that parents' first-aid knowledge and practice levels can be improved through training.[10,33] Comparison of mean scores before and after first-aid training showed a statistically significant improvement, indicating that the training was effective. This finding is consistent with El Seifi et al.[24] who found a significant increase in mothers' first-aid knowledge after training, and with Cetinkaya and Odabasi[10] who reported similar improvements in parents' understanding of pediatric burns. The post-training improvement in knowledge scores demonstrates that even brief, structured education can yield meaningful learning gains. The present study extends these findings by focusing specifically on pediatric head trauma-a critical yet understudied area-and demonstrating that a 15-minute nurse-led poster-based session can significantly enhance caregiver knowledge from a practical standpoint, such brief interventions are feasible to integrate into routine pediatric visits, immunization clinics, or community health programs.

Clinical findings of head trauma have been described in the literature.[2] Particularly in children who have experienced an accident affecting the head and neck region, signs such as loss of consciousness, swelling of the head, bruising under the eyes and behind the ears, or sounds such as crying or moaning may indicate head trauma.[2,34,35] In the study, parents' mean scores on the 1st, 3rd, 4th, and 6th post-test items increased, and these increases were statistically significant. Increased parental clinical signs of head trauma is crucial for early recognition and intervention of head injuries.

Immobilizing children who have sustained a head injury, without moving their heads, is crucial to maintaining their breathing and ensuring their survival, because head trauma can be associated with fatal TBI.[36,37] Therefore, administering appropriate first-aid in cases of head trauma is crucial for the child's health and survival. Statistically significant differences between the pre-test and post-test mean scores, particularly for items 7, 10, and 12 in Table 3, have important implications for addressing potential misconceptions held by parents. Increasing parents' knowledge and awareness regarding head trauma is a critical responsibility for preventing morbidity and mortality.

Study Limitations

This study has several limitations that should be considered when interpreting the findings. First, the absence of a control group limits the ability to attribute improvements solely to the training intervention. Second, the study assessed only short-term knowledge gains; no follow-up was conducted to evaluate knowledge retention or real-life application. Third, the sample was drawn from a single primary healthcare center in Türkiye using convenience sampling, which may limit the generalizability of the findings to other populations or settings. Additionally, the questionnaire used to measure knowledge was developed by the researchers; although content validity and reliability were assessed, psychometric properties, such as construct validity, were not fully established.

Conclusion

This study demonstrated that a brief, educational intervention improved parents' knowledge of first-aid for pediatric head trauma. Strengthening such community-based educational models can contribute to early recognition, appropriate management, and ultimately, a reduction in preventable morbidity and mortality. Future programs should combine theoretical and hands-on training to reinforce learning

and address persistent knowledge gaps. Integrating such interventions into primary healthcare services and parental education will enhance community preparedness and empower parents in responding effectively to pediatric emergencies.

Ethics

Ethics Committee Approval: Ethics committee approval for this research was obtained from the Hitit University Non-Interventional Research Ethics Committee (approval no: 2023-17, date: 01.11.2023).

Informed Consent: Consent was obtained from parents who presented to the primary health care center for reasons such as vaccination or treatment, to ascertain their willingness to participate in the study.

Footnotes

Authorship Contributions

Surgical and Medical Practises: S.S., Concept: S.S., Z.Ü., Design: S.S., Data Collection or Processing: S.S., H.D., Analysis or Interpretation: S.S., Literature Search: S.S., H.D., Writing: S.S., H.D., Z.Ü.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

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