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PUBTEXTO

Assessment of Mothers Safety Practices and First Aid Self-Efficacy in Preventing Home Accidents among Preschool Children

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Abstract

Aim: This study aimed to evaluate the safety precautions taken by mothers to prevent home accidents involving preschool-aged children and to assess their self-efficacy in providing first aid in such situations.

Methods: A cross-sectional descriptive study was conducted with 356 mothers of (3 to 4) year-old children enrolled in preschools in Agri, Turkey. Stratified sampling was employed. Data were collected via face-to-face surveys using a demographic information form, a household accident data form, a home safety measures checklist, and the First Aid Self-Efficacy Scale. Descriptive and inferential statistics, including t-tests and ANOVA, were used to analyze the data with SPSS 26.

Results: A total of 57.6% of children had experienced at least one home accident in the past year, with falls (42.4%) and burns (10.3%) being the most common. Mothers scored highest in fall prevention but lower in poisoning and burn prevention. Higher first aid self-efficacy scores were significantly associated with higher education, employment, and having fewer children ($p < 0.05$). A positive correlation was found between home safety scores and first aid self-efficacy.

Conclusion: The findings highlight the importance of maternal education in improving both home safety and first aid self-efficacy. Specific gaps in safety domains point to the need for targeted, culturally sensitive educational interventions that can empower mothers and reduce the incidence of preventable home accidents in early childhood.

Keywords: Home accidents; Mothers; Children; First aid self-efficacy; Safety precautions; Pediatric nursing

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Introduction

Unintentional injuries, particularly those occurring in the home, remain a major cause of morbidity and mortality among children worldwide. According to the World Health Organization [1], injuries account for up to 27% of deaths among children aged 1- 4 years. Over half of these incidents occur within the home [2], with falls, burns, poisoning, and choking being the most common and potentially life-threatening types [3,4].

In Turkey, similar patterns are observed. Recent data show that a substantial proportion of childhood deaths are due to external causes, including falls, burns, and drowning, especially among children aged 1-4 [5,6]. Preschool children, due to their developing motor and cognitive skills, are at heightened risk for such injuries [7,8]. Despite the perception of the home as a safe space, it often presents numerous hazards for this age group.

Parents-particularly mothers-play a key role in ensuring child safety and providing timely first aid in case of accidents. Studies indicate that maternal knowledge and self-efficacy significantly influence the outcomes of home injuries [9,10]. However, research in Turkey shows that a considerable proportion of mothers lack adequate first aid training and confidence [11,12].

Multiple contextual factors, including socioeconomic status, maternal education, and number of children, impact both the occurrence of injuries and the effectiveness of safety practices [13,14]. Despite growing international literature, studies addressing these issues among Turkish mothers remain limited.

This study aims to evaluate the safety precautions taken by mothers of preschool children and assess their self-efficacy in administering first aid. The findings are expected to inform pediatric nursing practice and guide parent-focused safety interventions.

Research Aim

This study aims to assess the safety measures mothers take in the home environment and their self-efficacy levels regarding first aid interventions in the event of an accident, considering the high risk of home accidents among children aged 3-6. The findings are expected to contribute to the development of both preventive and intervention-focused educational programs for mothers.

Materials and Methods

Study Design and Setting

This study employed a cross-sectional and descriptive research design. The study was conducted in a province's central district among mothers of preschool children attending early childhood education institutions. Data collection took place between December 1 and December 30, 2021. The study adhered to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) checklist, ensuring compliance with reporting standards.

Participants

A stratified sampling technique was utilized to recruit participants. The study population comprised mothers of 3-4-year-old children attending preschool institutions within the central district. The inclusion criteria were as follows:

- Being the mother of a 3-4-year-old child attending a preschool institution in the designated province.
- Fluency in Turkish (reading and writing proficiency).
- Absence of communication impairments (e.g., speech, vision, hearing, or mental disabilities).

Exclusion criteria included incomplete or inaccurately filled survey forms.

The required sample size was determined using the known population sampling method at a 95% confidence level, yielding a minimum required sample of 327 mothers. To account for potential non-responses, the sample size was increased by 10%, bringing the total to 360 mothers. After removing four incomplete responses, the final sample consisted of 356 mothers.

Study Instrument

The data collection instrument consisted of four structured forms designed to assess participants' awareness of household accidents and their self-efficacy in first aid practices:

- **Demographic Information Form:** Collected data on mothers' age, educational level, employment status, and children's age and gender.
- **Household Accident Data Collection Form:** Contained questions regarding accidents that occurred at home in the past year, including accident type and severity.
- **Household Safety Measures Form:** The Household Safety Measures Form was developed by the researchers based on a comprehensive review of national and international literature on childhood injury prevention [8, 10, 12-14]. During the development of the Household Safety Measures Form, expert opinions were obtained from five academics in the fields of pediatric nursing and public health to ensure the content was relevant and understandable. Based on their suggestions, minor revisions were made to improve the item clarity. The final version consists of 26 items designed to evaluate the preventive measures taken by mothers to mitigate household accidents. It includes four primary domains: falls (9 items), poisoning (5 items), drowning (4 items), and burns (8 items). Mothers were asked to respond to each item using a binary scale (Yes/No). Scoring and Interpretation: Each correct response was assigned 1 point, while incorrect responses were scored as 0. The total score ranges from 0 to 26, with higher scores indicating a greater level of household safety precautions. The scoring range for each subcategory is as follows:
    - Falls: Items 17, 18, 19, 31, 32, 33, 38, 39, 41 (0 to 9 points)
    - Poisoning: Items 25, 26, 34, 36, 37 (0 to 5 points)
    - Drowning: Items 20, 35, 41, 42 (0 to 5 points)
    - Burns: Items 21, 22, 23, 24, 27, 28, 29, 30 (0 to 8 points)

  Higher scores reflect a greater level of adherence to safety measures, while lower scores may indicate potential risk factors in the household environment.
- **First Aid Self-Efficacy Scale:** Adapted from [10] and validated in Turkish by [15] (Cronbach's alpha = 0.86) [10, 15]. This 12-item, 5-point Likert scale measured self-efficacy regarding first aid practices. The Cronbach's Alpha coefficient of this study is 0.84

Data Collection and Procedures

Following ethical approvals, the study was announced to encourage participation. Eligible mothers were invited to complete a structured survey while waiting in designated school waiting areas. The survey took approximately 15-20 minutes per participant. All assessments were conducted in accordance with established research protocols.

Data Analysis

The data were analyzed using IBM SPSS Statistics 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated. For inferential analyses, independent samples t-tests were used to compare two groups, while one-way ANOVA was applied for comparisons involving more than two groups. A significance level of $p < 0.05$ was considered statistically significant.

Result

Sample Characteristics

The study included 356 mothers, X with an average age of 32.8 ± 5.4 years. Most mothers were high school graduates (44.1%) or held a bachelor's degree or above (32.3%). A large proportion were unemployed (68.8%), and the majority had two children (52.0%). Regarding children, 73.0% were 4 years old and 55.3% were boys.

Table 1: *Types and Frequency of Home Accidents Experienced by Children.*

Characteristics	Responses	n	%
The child Accident Status	Yes	205	57.6
	No	151	42.4
Number of Accidents	1 Time	85	41.4
	2 Times	73	35.5
	3 and above	47	23.1
Type of Home Accident	Fall	132	42.4
	Bump	105	33.8
	Burn	32	10.3
	Risk of Choking	10	3.2
	Sharp Object Injury	27	8.7
	Poisoning	5	1.6
Presence of Permanent Damage	Yes	16	7.8
	No	189	92.2

More than half of the children (57.6%) had experienced at least one home accident in the past year. Among these, falls were the most frequently reported (42.4%), followed by bumps (33.8%) and burns (10.3%). Less common incidents included sharp object injuries (8.7%), poisoning (1.6%), and choking (3.2%). A small proportion (7.8%) of children suffered permanent damage due to these accidents (Table 1).

Table 2: *Association between Mothers Safety Measures and Selected Characteristics.*

Characteristics	Safety Precaution Practices Against Home Accidents				
	Fall $\bar{X}$ ± Sd Min-Max	**Poisoning** $\bar{X}$ ± Sd Min-Max	**Choking** $\bar{X}$ ± Sd Min-Max	**Burn** $\bar{X}$ ± Sd Min-Max	**Total** $\bar{X}$ ± Sd Min-Max
Accidents at Home					
Yes	6.75 ± 1.57 1.00 - 9.00	4.073 ± 1.01 0.00 - 5.00	3.76 ± 0.54 2.00 - 4.00	5.61 ± 1.42 2.00 - 8.00	20.14 ± 3.17 8.00 - 26.00
No	6.94 ± 1.44 2.00 – 9.00	4.24 ± 0.81 1.00 - 5.00	3.82 ± 0.42 2.00 - 4.00	6.07 ± 1.36 2.00 - 8.00	21.15 ± 2.91 10.00 - 26.00
t/p	t = -1.164 p= 0.245	t= -1.648 p= 0.089	t= -1.143 p= 0.236	t= -3.059 **p= 0.002****	t= -3.081 **p= 0.002****
Persistent Scarring					
Present	7.31 ± 1.35 4.00 - 9.00	4.06 ± 0.57 3.00 - 5.00	4.00 ± 0.00 4.00 - 4.00	5.93 ± 0.92 4.00 - 7.00	21.50 ± 1.89 18.00 - 24.00
Absent	6.64 ± 1.53 1.00 - 9.00	3.54 ± 0.85 0.00 - 5.00	3.71 ± 0.54 2.00 - 4.00	5.43 ± 1.463 2.00 - 8.00	19.08 ± 3.15 8.00 - 25.00
t/p	t= 1.699 p= 0.499	t= 2.362 **p= 0.008**	t= 2.048 **p= 0.000**	t= 1.352 **p= 0.015**	t= 3.010 p= 0.101

Mothers demonstrated the highest mean scores in fall prevention (Yes: 6.75 ± 1.57; No: 6.94 ± 1.44). However, significant differences were found in burn prevention (t = -3.059, p = 0.002) and total safety scores (t = -3.081, p = 0.002) between mothers of children who had and had not experienced accidents. Furthermore, mothers of children with permanent damage had significantly lower scores in poisoning (p = 0.008), choking (p = 0.000), and burn (p = 0.015) prevention (Table 2).

Table 3: *The Mean Self-efficacy Scores of Mothers in providing First Aid for Home Accidents.*

Scale	$\bar{X}$	Sd.	Min.	Max.
The First Aid Self-Efficacy Scale for Home Accidents	44.07	7.74	14.00	60.00

The mean self-efficacy score of mothers in providing first aid was 44.07 ± 7.74, with scores ranging from 14 to 60 (Table 3).

Table 4: *Comparison of Mothers Mean First Aid Self-efficacy Scores Based on Selected Characteristics (n=356).*

Characteristics	Groups	n	$\bar{X}$ ± Sd	Test Statistic	P
Educational Status	Primary	84	42.59 ± 7.64	F= 5.862	**0.003****
	High School	157	43.44 ± 7.50		
	Bachelor's Degree	115	46.02 ± 7.81		
Employment Status	Employed	111	45.59 ± 8.70	t= 2.331	**0.021**
	Unemployed	245	43.39 ± 7.17		
Number of Children	1 Child	63	46.82 ± 6.47	F= 5.683	**0.001****
	2 Children	185	43.83 ± 7.74		
	3 Children	63	41.38 ± 7.29		
	4 Children	45	45.00 ± 8.72		

F: One Way ANOVA, **t:** Student t test, *p<0.05

Mothers with a bachelor's degree or above had significantly higher self-efficacy scores (46.02 ± 7.81) compared to those with lower education levels (p = 0.003). Employed mothers also showed higher self-efficacy (45.59 ± 8.70) than unemployed mothers (p = 0.021).

In terms of number of children, mothers with only one child had the highest scores (46.82 ± 6.47), whereas those with three children had the lowest (41.38 ± 7.29), with a significant difference between groups (p = 0.001) (Table 4).

Discussion

This study confirms a high incidence of home accidents among preschool-aged children, with falls being the most common-consistent with both national and international findings [8,16]. Despite mothers reporting high awareness of fall risks, their continued frequency indicates a gap between knowledge and effective implementation. This underlines the need for behavior-oriented interventions focusing not only on knowledge but also on practical application in everyday routines.

Interestingly, safety scores related to burns, poisoning, and choking were significantly lower, particularly among mothers whose children had sustained permanent injuries. This may suggest that certain domestic hazards are underestimated or less recognized by caregivers. Prior studies similarly point to a lack of awareness and preventive action regarding thermal and chemical injuries in early childhood [12,17]. These findings underscore the need for anticipatory guidance and structured health education focused on less visible but high-risk injury types.

Considering the central caregiving role of mothers, especially in early childhood, enhancing their first aid self-efficacy could significantly improve the outcomes of home injuries. This finding supports previous research advocating for integrated first aid education in maternal-child health programs [15,18]. This self-perceived competence in administering first aid may reflect mothers' prior informal exposure to emergency situations or informal training received during child health visits. However, perceived confidence does not always translate into correct practice, highlighting the need for structured and validated first aid training. This aligns with findings from Yigit [18], but contrasts with lower self-efficacy scores reported in other populations [10,15]. Differences may stem from prior training, exposure to emergencies, or access to community health resources. From an emergency nursing perspective, this underscores the importance of integrating first aid education into maternal and child health services, particularly in communities where formal training opportunities are limited.

Education level, employment status, and number of children significantly influenced mothers' first aid self-efficacy. More educated and employed mothers reported higher confidence, while those with fewer children may have more time and energy to devote to safety and caregiving [18-20]. These findings align with previous research and emphasize the importance of targeting interventions toward mothers with lower education levels or greater caregiving responsibilities.

From a nursing perspective, these results highlight the critical role of pediatric and community health nurses in delivering accessible, context-sensitive training. Incorporating safety and first aid modules into routine child health visits and outreach programs may improve outcomes. Future studies should explore how increased self-efficacy translates into real-life emergency behavior and long-term injury prevention.

Conclusion

This study found a high rate of home accidents among preschoolers and gaps in maternal safety practices, especially for burns, poisoning, and drowning. First aid self-efficacy was moderate to high but varied by education, employment, and number of children. The positive link between safety behaviors and self-efficacy underscores the need for integrated, targeted training. Pediatric nurses and healthcare providers should focus on high-risk areas and tailor interventions to mother's socio demographic profiles to

enhance safety and emergency preparedness.

Limitations and Strengths

This study has some limitations. Data were self-reported, possibly leading to recall or social desirability bias. The cross-sectional design prevents causal inference, and the single-province setting limits generalizability. Additionally, while validated tools were used, the researcher-developed safety checklist requires further validation.

Strengths include being one of the few studies in Turkey to examine both home safety practices and first aid self-efficacy among mothers of preschoolers. Stratified sampling enhanced representativeness, and validated instruments with robust analyses improved reliability. The findings provide practical insights for pediatric nurses, public health professionals, and policymakers in preventing home accidents and supporting caregiver training.

Credit Authorship Contribution Statement

Ebru Ozdemir: Conceptualization, Data duration, Formal analysis, Investigation, Writing – original draft.

Nazan Calbayram: Methodology, Supervision, Project administration, Validation, Writing – review & editing.

Ethical Considerations

Ethical approval for the study was obtained from Canakkale Onsekiz Mart University Ethics Committee. In addition, official permission was secured from the Provincial Directorate of National Education. Before participation, mothers were informed about the study's objectives, and written informed consent was obtained. To maintain confidentiality, each participant was assigned a unique code, and all data were securely stored.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this work the author(s) used [ChatGPT] in order to [translation purposes]. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

Information Note

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Declaration of Competing Interest

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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