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Dark side of customs: scalding burns in childhood due to use of traditional teacup and teapot, in Turkey

Aysun Balseven-Odabaşı[a], Mahmut Şerif Yıldırım[b], Ramazan Akçan[a], S. Songül Yalçın[c], Tolga İnce[d], Ali Rıza Tümer[a] and Kaya Yorgancı[e]

[a]Department of Forensic Medicine, Hacettepe University, Ankara, Turkey; [b]Department of Forensic Medicine, Afyonkarahisar Health Sciences University, Afyonkarahisar, Turkey; [c]Department of Pediatrics, Hacettepe University, Ankara, Turkey; [d]Department of Pediatrics, Dokuz Eylül University, Izmir, Turkey; [e]Department of General Surgery, Hacettepe University, Ankara, Turkey

ABSTRACT

The most common type of burn among children is scalding burn. This study aims to reveal child abuse and neglect as a specific etiological factor that specific to our country, traditional teapot- and teacup-related scalding burns. Burn cases that admitted to our Burn Center were investigated, and among these, 72 cases suffering from scalding burns were included in the study. The interview forms issued upon admission of these cases were evaluated in detail. Out of 148 scalding burn cases, 48.6% were related to the use of traditional teapots and teacups. After a detailed assessment, all cases were considered neglect-related burns. As a result of considering the role of traditional teapots and teacups in pediatric injuries in our country, parents and caregivers should be warned about these types of injuries. Also, physicians must determine the possibility of child abuse or neglect in all pediatric burn cases.

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Scalding burn; teacup; teapot; child abuse; neglect

Introduction

According to the World Health Organization, accidental childhood burns are among major causes of pediatric morbidity and mortality (Rawlins et al. 2007; Srivastava and Vij 2020). The majority of accidental pediatric burns are caused by scalding (Coruh et al. 2005; Sakallioğlu et al. 2007; Cuenca-Pardo et al. 2008; Abeyasundara et al. 2011; Riedlinger et al. 2015; Purcell et al. 2021). In Turkey, the most popular beverage is hot tea, which is traditionally brewed by stacking one pot on top of another, called a "çaydanlık". The "çaydanlık" is a type of teapot that is widely used in Turkey. Due to its weight and shape, it can be easily overturned by children, posing a significant risk. Another risk is leaving teapot on the ground or on the edges of tables, which makes it easy for children to access it. The teapot has a high center of gravity due to its small base and tall structure, and it is made up of two sections stacked on top of each other, making the teapot easily prone to tipping over (Figure 1). The Turkish traditional teacup can also be easily tipped over by children like the "çaydanlık" due to its narrow bottom and ovoid-shaped lower part. In Turkey, tea and coffee are served at higher temperatures using the above-described tools, which makes them even more dangerous for children and increases the risk of scalding burns as a result of accidents (Chiu et al. 2007). All pediatric burns should be classified as medico-legal cases and require much more attention in terms of differential diagnosis (Yasti et al. 2006). Scalding injuries may be accidental secondary to parental supervision failure and child neglect or can deliberately be inflicted as in cases

CONTACT S. Songül Yalçın siyalcin@hacettepe.edu.tr Department of Pediatrics, Faculty of Medicine, Hacettepe University, Ankara, Turkey

Figure 1. "Çaydanlık" with its form (a) stacked on top of each other, (b) with the upper (for hot tea) and lower parts (for hot water) separately, (c) Pouring hot water and tea into a glass.

of child abuse. It is reported that approximately 5% of all pediatric burn cases are related to child abuse (Tümer and Yasti 2005). However, it is often difficult to determine whether the injury is accidental or non-accidental. Therefore, determining the etiology requires a multidisciplinary assessment. A multidisciplinary team consisting of pediatrists, surgeons, psychiatrists, and forensic medicine specialists should examine and assess the case to determine the etiology (Tümer and Yasti 2005; Yasti et al. 2006). Pediatric scalding burns have been widely studied in the literature. However, this is the first study designed to determine the characteristics of pediatric scalding injuries related to Turkish traditional teapots and teacups.

Materials and methods

This descriptive study was conducted on patients suffering from scalding burns due to "traditional teapot" and/or "traditional teacup" who were admitted to Hacettepe University Burn Center. The study was approved by the Local Ethics Committee of Hacettepe University with a decision number 07/14–25 and was conducted in accordance with the principles set forth in the Helsinki Declaration. A detailed face-to-face interview was conducted with 72 burn patients and their parents who were admitted to Hacettepe University Burn Center and referred to Forensic Medicine Clinic between 1 January 2008 and 31 December 2021, to gather information. Informed consent was obtained from all parents and patients above 12 years of age for participation in the study. Patients' ages, sex, extent of burn (percentage of affected total body surface area [TBSA]), depth of injuries, and etiology of burns were extracted from medical records and the burn treatment registry. Data regarding ages

and professions of parents, socio-demographic properties and socio-economic status, and family characteristics were obtained from the interview. Data about education status of the parents were recorded as the total number of academic years of education successfully completed in the education system. Patients were investigated in terms of age, sex, burn extent (TBSA%), depth of injuries, the place of event, and the position of the teapot. Scalding injuries were classified as splash and spillage.

IBM SPSS 23.0 is used for statistical analysis. The distribution of the data was tested using the Shapiro–Wilk test. As the data of burn extent were skewed, the effect of patient characteristics on burn extent was assessed using the Mann – Whitney U-test. Spearman correlation coefficient (r) was computed to determine the correlation between burn extent patients' characteristics. Statistical significance was considered at the level of $P < 0.05$.

The data associated with the paper are not publicly available; however, it can be made available upon reasonable request from the corresponding author.

Results

A total of 148 patients were admitted to the Burn Center of Hacettepe University, out of which 72 patients suffering from scalding burns related to "traditional teapot" or "traditional teacup" incidents gave their consent to participate in the study. Among them, 59 (81.9%) had burns caused by "traditional teapot", while 13 (18.1%) cases had burns caused by "traditional teacup". Out of the 72 patients included in the study, 41 (56.9%) were male and 31 (43.1%) were female. The age range of the patients was from the newborn period to 152 months, with a mean age of 30.9 months. The majority of patients were admitted from urban regions ($n = 71$). The mean (±SD) maternal age was 30.1 (±6.2) years, while the mean paternal age was 34.0 (±6.2) years. Only one mother was younger than 18 years when her child was born. Seventeen (23.6%) patients were single child. Ten patients (13.8%) had a previous admission to a hospital due to traumatic injuries, 6 of which were thermal trauma. Eight (12.7%) patients were suffering from various clinical conditions such as epilepsy, cerebral palsy, encephalopathy, hypertrophic cardiomyopathy, and hypercortisolism. There was a history of burn-related injury in the families of 19 (26.4%) patients. The general characteristics of the patients are shown in Table 1. All of the incidents, except for one that occurred in a cafe, took place in the home environment, in the presented series. Most of the burn injuries occurred in the living room (Table 2). In 61 cases (84.7%), parents intervened by applying cold water to the burn before admission to the hospital. However, in three cases (4.2%), there was no treatment or intervention before admission. For a detailed examination, scalding burns were divided into two groups: dipping type and splashing type burns. Out of all, four (5.6%) patients suffered from dipping-type scalding burns. In the presented series, 13.9% of patients had second- or third-degree burns involving more than 10% of their total body surface area, and one patient had full thickness skin burns. Hospitalization was required for treatment and motorization in 62 cases (Table 2). Out of all, 7 (9.7%) patients needed surgical intervention, and 3 (4.2%) patients were monitored in the intensive care unit. On the other hand, 33 patients (45.8%) were treated only medically. Hospitalization reason was genital burns, extremity burns, or facial burns for 61.9% of the patients. Following a medico-legal evaluation, all cases were considered home accidents or neglect by caregivers. None of the cases were classified as child abuse.

The median size of total body surface area affected by burns was 8.0% (Table 3). The extent of burn injuries was not correlated with maternal age and education level, paternal age and education level, household characteristics, number of siblings, or family income.; However, there was a negative correlation between burn extent and the age of patient ($r = -0.273$, $p = 0.031$).

The size of burn was larger in cases resulting from çaydanlık-related burns compared to those resulting from teacup burns ($p = 0.025$). The location of the burn incident also affected the size of the burn injury; burns resulting from hot water or tea on the cooker had a larger size than those resulting from hot water or tea on the table ($p = 0.027$).

Table 1. General characteristics of the patients.

		n (%)	*Mean ± SD*
Patient's age	*<3 years*	54	
	≥3 years	18	
Gender	*Male*	41 (56.9)	
	Female	31 (43.1)	
Maternal age, years			30.1 ± 6.2
Paternal age, years			34.0 ± 6.2
Maternal education, years			8.3 ± 3.9
Paternal education, years			9.7 ± 3.8
Maternal occupation	*Working*	17 (23.6)	
	Housewife	55 (76.4)	
Family income	*Below minimum wage*	44 (61.1)	
	Minimum wage or above	28 (38.9)	
Number of sibling	*0*	17 (23.6)	
	≥1	55 (76.4)	
Household size	*3–5 members*	61 (84.7)	
	≥6 members	11 (15.3)	
Heating system of the house	Central heating	46 (63.9)	
	Stove	26 (36.1)	
Any injury history of patient	*Yes*	10 (13.9)	
	No	62 (86.1)	
Burn injury history of patient	*Yes*	6 (8.3)	
	No	66 (91.7)	
Burn injury history of family members	*Yes*	19 (26.4)	
	No	53 (73.6)	

Table 2. Some characteristics of the present burn injury.

		N (%)
Instrument causing burn	Çaydanlık	59 (81.9)
	Tea cup	13 (18.1)
Position of çaydanlık or tea cup	On the table	52 (72.2)
	On the cooker	20 (27.8)
Place of event	Lounge	30 (41.7)
	Kitchen	24 (33.3)
	Living room	17 (23.6)
	Others	1 (1.4)
Family intervention	No	3 (4.2)
	Cold water	61 (84.7)
	Other	8 (11.1)
Degree of burn	1st degree	2 (2.8)
	2nd degree	64 (88.9)
	3rd degree	6 (8.3)
Treatment	Hospitalization	62 (86.1)
	Outpatient	8 (11.1)
	No treatment	2 (2.8)

Discussion

A review of the literature reveals that scalding burns comprise the overwhelming majority of pediatric burns (Balseven-Odabaşi et al. 2009; Othman and Kendrick 2010; Aliosmanoglu et al. 2013; Trop et al. 2015; Lee et al. 2016; Saeman et al. 2016; Banerjee and Shumba 2020). Phillips et al. (1986) showed that 92.5% of pediatric scalding burn-related patients were scalded with hot water or tea/coffee. Similarly, çaydanlık and traditional tea cup-related burns are a significant cause of scalding burns (Sakallioğlu et al. 2007). In this study conducted in Ankara, Turkey, 48.6% of pediatric scalding burn cases were due to çaydanlık or traditional teacup-related incidents. Burn injuries are among common causes of morbidity and mortality in pediatric population, with younger children being at a higher risk (Xin et al. 2006; Rawlins et al. 2007; Othman and Kendrick 2010; Patel et al. 2018). In a previously conducted study in Turkey, 40% of 186 patients

Table 3. The median burn extent according to patient characteristics.

		median	25–75%	P
Overall		8.0	4.0–13.0	
Patient's age	<3 years	10.0	4.8–14.3	0.005
	≥3 years	5.0	1.0–7.0	
Patient's sex	Male	9.0	5.0–14.0	0.086
	Female	5.0	2.0–13.0	
Maternal occupation	Working	3.0	1.0–10.0	0.013
	Housewife	8.0	5.0–14.3	
Number of sibling	0	9.0	6.0–13.0	0.268
	≥1	7.0	3.0–13.0	
Heating system	Central heating	6.0	2.5–10.0	0.039
	Stove	12.5	4.8–15.0	
Household size	3–5 members	8.0	3.0–13.0	0.257
	≥6 members	10.0	5.0–17.5	
Previous injury of the patients	Yes	5.5	1.8–17.5	0.544
	No	8.0	4.0–13.0	
Previous burn injury of the patients	Yes	9.0	4.0–15.0	0.380
	No	7.5	3.3–12.0	
Family income according to national *minimum wage*	<Min. wage	8.0	4.23–13.8	0.186
	≥Min. wage	8.0	1.0–10.0	
Instrument causing burn	Çaydanlık	8.0	5.0–14.0	0.025
	Tea cup	4.5	1.0–9.5	
Position of çaydanlık or tea cup	On the cooker	12.5	6.0–15.0	0.027
	On the table	6.0	3.0–11.0	

with pediatric burn injuries were under 12 months old (Aytaç et al. 2004). Rossi et al. (1998) reported that 50% of pediatric burn injury cases treated at their center in Brazil were under 3 years of age. Similarly, Mashreky et al. (2008) studied the epidemiological survey of pediatric burn injuries and found that the incidence of burn injuries is highest among active preschool children, particularly those aged 1–4 years. Consistent with the literature, most of patients in our series were under 2 years of age, and scalding injuries are the most commonly observed in younger children (Xin et al. 2006). Many published studies reveal a male predominance in cases of pediatric burn injuries (Coruh et al. 2005; Rawlins et al. 2007; Othman and Kendrick 2010). The data obtained in the present study are compatible with the related literature.

The incidence of burns in working mothers' children is lower, which may be due to the fact that these children are typically in daycare during the daytime and spend less time at home, resulting in fewer opportunities for home accidents.

According to the literature, the majority of pediatric burns occur in the home environment (Carlsson et al. 2006; Goldman et al. 2006; Dongo et al. 2007). In this study, all but one of the burn incidents occurred in the home, with the most common location being the salon/living room. However, kitchen and bath were reported to be the most common places for scalding burn injuries, in some other previously conducted studies (Rossi et al. 1998; El-Badawy and Mabrouk 1998; Fukunishi et al. 2000). It should be noted that in Turkish households, the salon/living room is often used as a dining area, which may explain why this location was the most common for scalding burn injuries in our series. Additionally, as tea is a traditional beverage in Turkey, it is often served to family members or guests in salon/living room. This is consistent with the findings of Tse et al. (2006) who reported that 83 of 144 pediatric burn cases they investigated occurred in living room.

This can be attributed to awareness of educated individuals about domestic accidents and being more conscious about child protection.

In the literature, low family income is reported to be among the risk factors for pediatric burn cases (Forjuoh 2006; Patel et al. 2018). In this study, only 38.9% of all patients were from families whose income is equal to or slightly above minimum wage. The minimum wage in our country is determined by a committee consisting of workers, employers, and the government, close to the poverty line announced by TurkStat. However, there was no correlation between economic status, burn severity,

and the extent of the involved area. In accordance with our finding, Othman and Kendrick also showed that poor living conditions and familial burn history are risk factors for childhood burn injuries (Othman and Kendrick 2013). An overwhelming majority (69.8%) of the presented cases had a history of burns in their family. In Akita et al.'s (2005) study, the mean burned area was 8.9% of the total body surface area. The mean percentage of burned TBSA was recorded as 44.5% in scalding burns, which is much higher than the rates given in the literature in the series of Patel et al. (2018). In our study, the median burned TBSA was 8%, similar to Akita et al.'s study (2005).

The burned TBSA was found to be significantly higher in families with only one child or in families with more than three children. This could be a result of the inexperience of families with only one child, as well as the challenging situations faced by families with multiple children.

In this study, 64 patients (88.9%) were under the age of 7, and 54 patients (75.0%) were under the age of 3, indicating a need for supervision to prevent domestic accidents, especially in young children. All burn incidents were preventable and indicative of lack of supervision or neglect. Therefore, physicians should evaluate all pediatric burn cases in terms of child abuse and neglect when they admitted to the hospital. In addition, they should investigate the risk factors of the child and family related to abuse and neglect, social factors of the family, and repetition of the injury in such cases. The types and etiologies of burns may vary regionally (Patel et al. 2018; Allen et al. 2021). Therefore, it is necessary to consider regional differences to prevent pediatric burns. While this study highlights the regional causes of pediatric scalding burns, it would be shortsighted to assume that this issue does not have a global aspect. This is because the Turkey originated peoples have migrated all over the world, particularly in Europe, and carried their own culture with them.

Conclusions

It is important to note that while lack of supervision or neglect may contribute to pediatric burn incidents, it is not always the case. Other factors such as unsafe living conditions and inadequate safety measures can also contribute to burn injuries in children. Therefore, a thorough investigation is needed to identify the underlying causes of burn incidents in pediatric patients, and appropriate measures should be taken to prevent future occurrences. Health-care providers play a crucial role in identifying potential cases of child abuse and neglect and ensuring that appropriate interventions are implemented.

Traditional teapots and teacups are responsible for a significant number of scalding injuries in Turkey, particularly among children. To address this issue, it is essential to educate parents about the risk of domestic injuries. Given the prevalence of traditional teapots and teacups in pediatric scalding injuries, parents must be informed about the potential dangers and safety measures associated with their use in the home. Additionally, physicians should remain vigilant about the possibility of child abuse or neglect in all pediatric burn cases.

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ORCID

Aysun Balseven-Odabaşı http://orcid.org/0000-0003-3619-767X
Mahmut Şerif Yıldırım http://orcid.org/0000-0001-8861-9016
Ramazan Akçan http://orcid.org/0000-0002-4100-9488

S. Songül Yalçın http://orcid.org/0000-0001-9061-4281
Tolga İnce http://orcid.org/0000-0001-6686-5208
Ali Rıza Tümer http://orcid.org/0000-0002-0547-4868
Kaya Yorgancı http://orcid.org/0000-0003-4346-289X

Ethics

The Hacettepe University Ethics Commission approved the original surveys. This study was performed in line with the principles of the Declaration of Helsinki.

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