

Patients admitted to emergency units with injuries related to the four Hajj-associated annual animal sacrifice feasts from 2010 to 2013

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Ann Saudi Med 2016; 36(2): 139-142

DOI: 10.5144/0256-4947.2016.139

BACKGROUND: During the Eid al-Adha (“Sacrifice Feast”) religious holiday in Muslim communities animal sacrifices are made over a period of 3 days every year.

OBJECTIVES: The aim of this study was to determine the type of sacrifice-related injuries, the characteristics of patients, treatments for injuries, and relationships between these factors to determine precautions that could be taken to avoid or mitigate sacrifice-related injuries.

DESIGN: Retrospective study of medical records.

SETTING: Emergency units at two hospitals from 2010 to 2013.

PATIENTS AND METHODS: Patients admitted for treatment for injuries associated with sacrificial cutting during the four annual sacrifice feasts were classified as professional butchers, apprentice butchers, and third persons who were neither professional butchers nor apprentices.

MAIN OUTCOME MEASURE(S): Injuries associated with animal sacrifice.

RESULTS: Of 592 patients, 22 (3.7%) were professional butchers, 149 (25.2%) apprentice butchers, and 421 (71.1%) third persons. Significant relationships were found between the profession of the injured person and the injury and subsequent treatment ($P < .05$).

CONCLUSION: To prevent and minimize the injuries associated with sacrificial cutting, there should be an area designated for sacrificing animals. Moreover, sacrifices should be performed by professionals in possession of a sacrificial cutting certificate. If owners of sacrificial animals insist on slaughtering animals, they should be trained by professional butchers who have a teaching certificate. To deal with an increasing number of such injuries during the sacrifice feast, hospital emergency units need to be adequately resourced with adequate equipment and staff.

LIMITATIONS: Regional and local data could not be assessed completely. Patients who presented on the 4th day were not included in the study.

The sacrifice feast is a holiday celebrated every year over a period of 4 days from the 10th day of the month of *Zilhicce* by Muslims across the Islamic world. During this festival, which falls during the period of Hajj (pilgrimage), the custom of the sacrificial cutting of animals is undertaken as part of religious worship over 3 days. The obligation is performed by sacrificing ovines such as sheep and goats, or bovines such as camels and cattle.^{1,2} As the sacrifice itself and the sub-

sequent processing of the meat is often undertaken by the owners of the sacrificed animals or by people who are not professional butchers, preventable injuries such as stab wounds and blunt trauma may occur. The aim of this study was to determine the origin of the injuries associated with sacrificial cutting, the characteristics of patients, treatment for injuries, and relationships between these factors to determine precautions that could be taken to avoid or mitigate sacrifice-related injuries.

PATIENTS AND METHODS

Included in this retrospective study were patients admitted to the emergency units of two hospitals (which provide healthcare to approximately 2.5 million people in the cities of Istanbul and Ankara) for treatment relating to injuries associated with sacrificial cutting during four sacrifice feasts, which occurred between 2010 and 2013. The patients were assessed by demographic characteristics, type of injuries, the treatment administered, and the relationships between these factors. Patients were classified as professional butchers, apprentice butchers, and third persons who were neither professional butchers nor apprentices.

Data analysis was performed using the statistical software package SPSS, v15.0 IBM, Chicago, IL., USA. Categorical variables are expressed as number and percent, and continuous data as the mean and standard deviation. The relationships between the categorical variables were evaluated using the likelihood ratio test. A value of $P < .05$ was considered statistically significant.

RESULTS

Of the 592 patients included in this study, 504 (85.1%) were male and 88 (14.9%) were female. The mean (standard deviation) age of the male patients was 33.8 (11.3) years while the mean age of the female patients was 37.5 (17.5) years. There were 22 (3.7%) professional butchers, 149 (25.2%) apprentice butchers, 421 (71.1%) third persons (**Figure 1**).

Among the injuries, 84% were stab wounds, which occurred while the animal was sacrificed or during the subsequent preparation of the meat, while 16% were due to blunt trauma caused by the animal. Considering

the day of presentation to the emergency unit, 78% (n=462) of the patients presented on the first day of the holiday, 14% (n=83) on the second day, and 8% (n=47) on the third day.

Most (n=465, 78.5%) patients presented with simple skin abrasions and cuts, 66 (11.1%) had different levels of tendon damage, 11 (1.8%) had muscle, nerve, tendon, and blood vessel injuries, 35 (5.9%) had fractures of the extremities, 7 (1.2%) had amputated fingers, 4 (0.6%) had abdomen and chest injuries, and 2 (0.3%) had an eye injury. In addition, a further 2 (0.3%) patients died as a result of a blunt trauma injury caused by the animal.

Of patients who presented at the emergency unit, 422 (71.3%) were treated by the emergency unit physician; 115 (19.4%) patients were also seen by a plastic surgeon, 55 (9.3%) by the orthopedics department, 4 (0.7%) by a general surgeon, and 2 (0.3%) by the department of eye diseases (**Table 1**).

Primary repair and dressing were administered to

Table 1. Characteristics of patients.

Characteristic	n (%)
Sex	
Male	504 (85.1)
Female	88 (14.9)
Age	
Male	33.82 (11.3)
Female	37.51 (17.5)
Hospital	
Ankara Training and Research Hospital	484 (82.9)
Istanbul Bagcilar TRH	108 (17.1)
Type of wound	
Stab wound	497 (84.0)
Blunt trauma	95 (16.1)
Day of presentation to the emergency unit	
1st day of the Holiday	462 (78.0)
2nd day of the Holiday	83 (14.0)
3rd day of the Holiday	47 (7.9)
Consultation	
Plastic surgery	115 (67.7)
Orthopedics	55 (32.4)
General surgery	4 (2.4)
Eye	2 (1.2)
Treatment	
Primary closure	471 (79.6)
Muscle-tendon repair	66 (11.1)
Plaster splint	35 (5.9)
Hospitalization	18 (3.0)
Death	2 (0.3)

Data are mean (standard deviation) or number (percent).

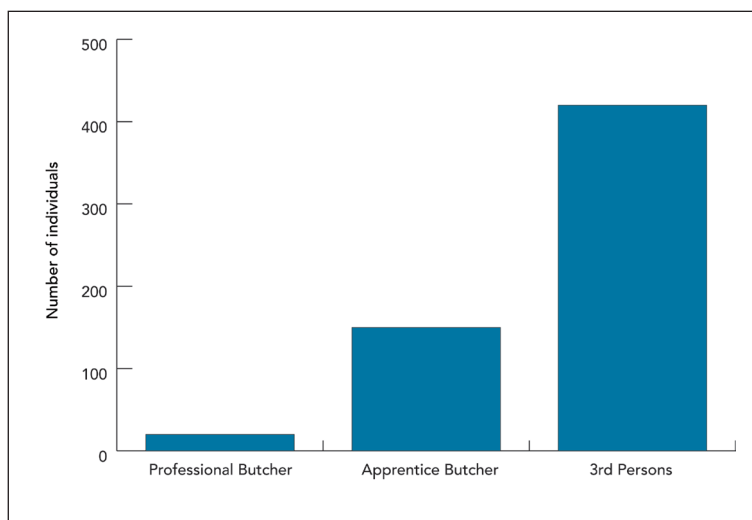


Figure 1. Distribution of the individuals presenting with injuries.

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471 (79.6%) patients, a partial tendon repair was performed on 66 (11.1%) patients, plaster/splint treatment was applied to the fractured extremity in 35 (5.9%) patients; these patients were discharged soon after treatment. In addition, 11 (1.9%) and 7 (1.2%) patients were hospitalized and operated on for tendon/blood vessel/nerve injuries and amputation, respectively. Two (0.3%) patients died following blunt trauma to the abdomen and chest (**Table 1**).

A significant relationship was established between the professional occupation of the patient and the injury ($P=.020$) (**Table 2**) and the treatments administered ($P=.036$) (**Table 3**). No significant relation was established between the professional occupation of the patient and the type of consultation requested by the emergency unit from other relevant departments.

DISCUSSION

During the sacrifice feast, every Muslim who has the financial means sacrifices their best ovine (sheep or goat)

or bovine (cattle, berk, camel) animal. While ovines are small enough to be sacrificed by one person, seven people are needed to sacrifice one bovine.^{1,2} Since sacrifices are conducted by males, the injuries mostly occur in men. In our study, 85.1% of the 592 who presented to the emergency units were male.

The sacrifice feast takes place over 4 days, but sacrifices can be made on only the first 3 days. However, most sacrifices are performed the first day, which is considered more ethical.^{1,2} Therefore, most of the injuries relating to animal sacrifice occur on the first day. In our study, 78% of patients who presented to emergency units for treatment did so on the first day. In the studies performed by Bildik et al and Dizen et al, most of the injuries were reported to have occurred during the first day.^{3,4}

Injuries, including stab wounds or blunt trauma, can occur during the act of sacrifice or the subsequent preparation of the meat. In our study, 84% of the injuries were human-inflicted stab wounds. This is similar

Table 2. Distribution of the injured groups by type of injury.

	Professional butcher	Apprentice butcher	3rd persons	Total
Simple lesion	20 (3.4)	112 (18.9)	333 (56.3)	465 (78.6)
Tendon damage	2 (0.3)	28 (4.7)	36 (6.1)	66 (11.1)
Muscle, nerve, tendon, vessel lesion	-	2 (0.3)	9 (1.6)	11 (1.9)
Fracture	-	6 (1)	29 (4.9)	35 (5.9)
Amputation	-	1 (0.2)	6 (1.05)	7 (1.2)
Other	-	-	6 (1)	6 (1)
Death	-	-	2 (0.3)	2 (0.3)
Total	22 (3.7)	149 (25.2)	421 (45.6)	592 (100)

Values are number (%). $P=.020$ (Likelihood ratio test, Pearson chi square test statistic=14.993).

Table 3. Distribution of treatment in the injured groups.

	Professional butcher	Apprentice butcher	3rd persons	Total
Primary repair	20 (3.4)	112 (18.9)	339 (57.3)	471 (79.6)
Muscle, tendon, vessel, nerve repair	2 (0.3)	28 (4.7)	36 (6.1)	66 (11.1)
Plaster- Splint	-	6 (1)	29 (4.5)	35 (5.9)
Hospitalization	-	3 (0.5)	15 (2.5)	18 (3)
Death	-	-	2 (0.4)	2 (0.4)
Total	22 (3.7)	149 (25.2)	421 (71.1)	592 (100)

Values are number (%). $P=.036$ (Likelihood ratio test, Pearson chi square test statistic=16.457).

to a study by Avsaroglu et al, who reported that 88% of injuries were human-inflicted stab wounds.⁵ Sacrifice may be performed by professional butchers, apprentice butchers, or the owners of the sacrificed animal. Non-professionals are most commonly injured. In addition, women who assist during the preparation of the meat or men who assist the individual performing the sacrifice may be injured.

In our study, patients were grouped by the type of injury and the treatment. The rate of presentation to the emergency unit of professional butchers was 3.7%. Most (96.3%) of the injuries were in individuals who were not professional butchers (these were apprentice butchers, 25.2%; owners of the sacrificed animals, 45.6%; wives of the owners, 14.9%; and other people assisting with the sacrifice, 10.6%). In the study by Bildik et al, 96% of the injured individuals had limited experience with butchery.^{2,3} In a study by Rahman et al on people presenting to emergency units for sacrifice-related injuries over a four-year period, 92% were non-professional butchers.⁶ Our study results are consistent with those of Bildik et al and Rahman et al.^{3,6}

The majority of the sacrifices are performed by individuals with insufficient experience, who tend to present more often with stab wounds. In our study, 96.6% of the patients were treated in the emergency unit or in relevant clinics and were then discharged; 3.1% of the patients were hospitalized for further treatment, 0.3% died due to blunt trauma injuries. Nearly three-quarters (n=422, 71.3%) were treated and discharged directly from the emergency unit without further consultation. Injuries in nonprofessionals were more serious. Relationships between professional occupation,

the type of injury and treatment were statistically significant.

In the study by Bildik et al, the most common types of injury were cuts and abrasions to the skin, as in our study. Moreover, they reported that suturing was the most frequent treatment.³ In the study by Sica et al, 50 patients evaluated by plastic surgeons had blood vessel and nerve injuries, which accompanied flexor tendon injuries.⁷ The results of our study support these findings. In the study by Sarifakioglu et al with 98 patients, the types of injury and rate of occurrence were also similar to our results.⁸

A limitation of the study is that regional and local data could not be assessed completely because only certain hospitals were included in the study. Patients who presented on the the fourth day of the feast or after the feast and patients who had minor injuries were not included to the study.

While the sacrifice feast meets important spiritual needs, individuals and the authorities need to take responsibility for the prevention of unnecessary injury. To minimize morbidity associated with these practices, we suggest that sacrifices be performed only by people with professional experience who have a "sacrificial cutting certificate" and who use safe and hygienic equipment. These measures should be explained to those attending festivals of sacrifice. If owners of sacrifices insist on slaughtering themselves, they should be trained by a professional butcher who has a teaching certificate. In addition, proper equipment and staffing of emergency units and specialist clinics is needed to ensure rapid response to injuries incurred despite these precautions.

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