

Deaths in Hotels

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Abstract

Background: Deaths occurring in hotels are the result of several causes like asphyxia due to fire, intoxication and multiple traumas on the body.

Methods: In this study, 28359 death records of the Council of Forensic Medicine, Istanbul, Turkey between 1 January 2000 and 1 January 2008 were analyzed retrospectively and 76 cases of deaths identified in hotels were included. Data about these cases were evaluated regarding age, sex, marital status, occupation, nationality, history, scene investigation and autopsy findings and cause of death.

Results: The mean age of the cases was 39.69±4.32 (range between 1 and 78 years). Sixty (78.9%) males and 16 (21.1%) females with a male/female ratio of 3.75 were recorded. Nationality was Turkish in 58 (76.3%) cases and foreign in 18 (23.7%) cases. Autopsy was performed in 75 (98.7%) cases.

Conclusion: We concluded that safety measures targeting detailed booking and health records at entry to hotels, improving security measures against firearms at airports, correcting deficiencies in basic facilities like electricity and ensuring barricades and lifeguards at the beaches and pools and implementing legal arrangements like physicians at place of work could lower death rates.

Key Words: Hotel, death, autopsy, scene investigation

Introduction

Individuals with limited housing options might also live in motels, sometimes with rent subsidised by welfare agencies. These housing situations can be important indicators of socioeconomic deprivation beyond that which can be determined on the basis of income alone [1]. Homeless and marginally

housed individuals living in shelters, rooming houses, or hotels have significantly higher mortality rates than individuals with incomes in the lowest fifth of the distribution [2]. Compared with the entire cohort, life expectancy was shorter by 13 years for men and eight years for women living in shelters; 11 and nine years, respectively, for those living in rooming houses; and eight and five years, respectively, for those living in hotels [3].

Many excess deaths were attributable to diseases related to alcohol and smoking and to violence and injuries, much of which might have been related to substance misuse. There were also many excess deaths related to mental disorders and suicides. Other research suggests that expanding the implementation of recent innovations in supported housing programmes for people with addictions and mental illness could be instrumental in reducing the number of excess deaths [4]. The most common methods of suicide for the Manhattan nonresidents were long fall, hanging, overdose, drowning, and firearms; the most common locations included hotels and commercial buildings [5]. Between 1978 and 1997 the Institute of Legal Medicine of the Hannover Medical School examined 17 fatal autoerotic deaths. One of the them were found in a hotel room [6].

Hotels are economic, social and socially controlled establishments that provide paid lodging and meals, usually on a short-term basis to be preferred by physical components like structure, technical equipment, comfort and service conditions and moral components like social value and quality of service and staff [7]. Hotels are used by national and international guests with travel and business purposes. Service is provided by hotel employee.

Deaths occurring in hotels are the result of several causes like asphyxia due to fire, intoxication and multiple traumas on the body [8-15].

The aim of this study was to determine the causes of deaths hotels to investigate hotel neglect and deficiencies in preventable deaths and to discuss possible precautions.

Methods

All cases submitted to the First Specialization Board of the Council of Forensic Medicine, Ministry of Justice between 1 January 1999 and 1 January 2008 were reviewed. The First Specialization Board is an official expert commission and serves as a supreme board in Turkey. Cases are submitted to this board by the courts from all over the country demanding a more detailed examination and a final conclusion. The Board consists of a general surgeon, a cardiovascular surgeon, a neurosurgeon, a gynecologist, an internist, a cardiologist, a hematologist, an immunologist, a pathologist and three forensic specialists. This Board evaluates the whole material in the files and tries to determine the cause of death and prepares a final report. The final reports are detailed in origin and preserved by the Council of Forensic Medicine.

In this study, 28359 death records of the Council of Forensic Medicine, Istanbul, Turkey between 1 January 1999 and 1 January 2008 were analyzed retrospectively and 76 cases of deaths identified to have occurred in hotels were included. Data about these cases were evaluated regarding age, sex, marital status, occupation, nationality, history, scene investigation and autopsy findings and cause of death.

Results

The mean age of the cases found death in hotels and evaluated by the First Specialization Board of the Council of Forensic Medicine was 39.69 ± 4.32 (range between 1 and 78 years). Sixty (78.9%) males and 16 (21.1%) females with a male/female ratio of 3.75 were recorded. Data about age and sex are shown in Table 1.

Marital status was recorded as married in seven, single in eight and unknown in 61 (80.3%) cases and eighteen (23.7%) of them were recorded as living alone, 21 (27.6%) not living alone and in 37 (48.7%) cases no information was available.

Nationality was Turkish in 58 (76.3%) cases and foreign in 18 (23.7%) cases. Information about occupation was missing in 62 (81.5%) cases; the remaining were four students, three retired, three self-employee, three hotel personnel and one tourist guide.

Location of cases were hotel room in 68 (89%), hotel bathroom in three, hotel toilet in two, hotel disco in one, hotel beach in one, hotel pool in one and in front of the hotel building in one.

Main findings at scene investigations consisted of medications used in chronically heart diseases, asthma and diabetes, alcoholic beverage, oriental tobacco, cigarettes, numerous sedatives and narcotic drugs and related empty boxes, eight syringes, knives, bloodstains on the bed sheets, sofa bed, toilet seat edges and carpets, a rope hanging from the ceiling, short barrel guns shells and cartridges, suicide letters, a hammer, damaged and loose electricity conduits, pieces from the corpses in sacks in the rooms or bathrooms and messiness. A dead

Table 1. Distribution of the cases according to age groups and sex

Years	Sex		Total	Percent
	Male	Female		
0-10	0	2	2	2.6
11-20	3	2	5	6.6
21-30	10	2	12	15.7
31-40	19	6	25	32.9
41-50	16	0	16	21.1
51-60	8	3	11	14.5
61-70	3	1	4	5.3
71-	1	0	1	1.3
Total	60 (78.9)	16 (21.1)	76 (100.0)	100.0

person with an intravenous serum in the arm and a syringe with dissolved heroin and a piece of lemon in the background can be seen in Figure 1,2.



Figure 1. A dead person with an intravenous serum in the arm is seen



Figure 2. The same dead person with a syringe with dissolved heroin and a piece of lemon in the background is seen.

Wounds in 1-1.5 cm diameter at the chest region of the clothing probably due to firearms and plaster bandage on the leg of one case were observed. Deposits of gunpowder were detected at ballistic investigation of the wounds. Examination of the guns demonstrated that one was handmade and each of them was in running order.

Upon autopsy examination performed in 75 (98.7%) cases no signs of external trauma could be detected in 52 cases. In nine cases, decay of the body resulted in insufficient data for differential diagnosis about external trauma. Two cases with foamy fluids in the mouth and nose were recorded.

Entrance and exit wounds in the skull and chest were detected in cases with findings in accordan-

ce with firearms injuries (Figure 3,4). X-ray evaluation before autopsy of the case deceased after gunshot injury on the neck revealed pellets compatible with hunting gunshot (Figure 3). In cases with findings indicating trauma and electric shock (Figure 5), crater-like lesions collapsed in the center and raised in the margins, superficial skin and subcutaneous lesions, blunt wounds, ecchymosis and hematoma were identified (Figure 6).



Figure 3. Entrance wound in the neck was detected in a case with findings in accordance with firearms injury. X-ray evaluation on the right side before autopsy of the case deceased after gunshot injury on the neck revealed pellets compatible with hunting gunshot



Figure 4. Exit wound in the skull was detected in another case with findings in accordance with firearms injury



Figure 5. In cases with findings indicating trauma and electric shock



Figure 6. Crater-like lesions collapsed in the center and raised in the margins, superficial skin and subcutaneous lesions, blunt wounds, ecchymosis and hematoma were seen in an old woman

In a female case, a woman is found dead, a plastic bag covering her head, face and neck so that it prevents her from breathing. Hands and arms with legs and foot are tied to her back with a rope which is also tied to her neck, which is called swine rope (Figure 7).

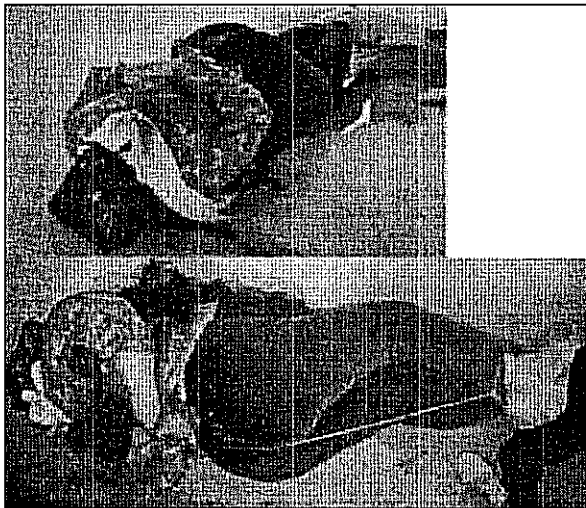


Figure 7. Hands and arms with legs and foot are tied to her back with a rope which is also tied to her neck, called swine rope

In a female case lacerations in vulva and vagina and in the posterior fornix and cervix were noticed. In one case, the head and the body were separated reflecting traumatic injury and both arms and legs were rid apart from the trunk with their ends released.

In three cases, signs of head injury, in four cases injection marks on the back of the hand and in the antecubital fossa were observed.

In five cases, scar on the arms and abdomen were detected possibly resulting from razor blade wounds. Macroscopic results upon autopsy examination of the internal organs illustrated decay in nine cases while assessment was impossible but signs about trauma to the bony structure were not detected.

One case with incised wounds on the chest revealed stab wounds in the lung and heart at autopsy examination. Autopsy examination in one case of death from hanging demonstrated subcutaneous ecchymosis in soft tissue under the posterior region of the neck showing an ascending pattern of ecchymosis and fracture of the hyoid cartilage.

In four cases skull bone fractures, subarachnoid hemorrhage, brain tissue damage, cervical bone fracture and spinal cord injury, and neck vessel-nerve bundle injury were detected in concordance with gunshot injuries. In one of these cases a hammer was found beside the corps (Figure 6,8,9). In one case, fracture of the rib, lung and heart injury were detected probably due to firearm injuries. In another case with a severe damaged corpse, the head was separated at the 3. and 4. cervical vertebra. In one case, fractures in the skull bones, subarachnoid hemorrhage, and damage of the brain tissue, rib fractures and lung contusion were recorded in accordance with fall from height.

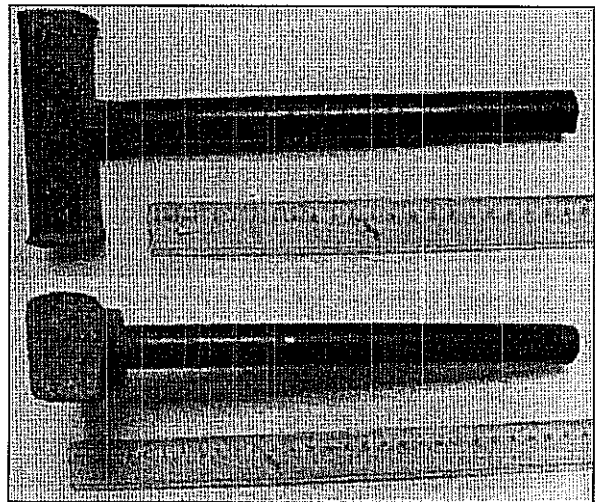


Figure 8. A hammer was found beside two corps

Macroscopic findings were as follows: Brain examinations revealed edema, congestion, paleness, and hyperemia, elimination of the sulcus, flattening of the gyrus, epidural, subdural and subarachnoid and intracerebral hemorrhage and skull

bone fractures in some cases while in some cases macroscopic pathology was absent.

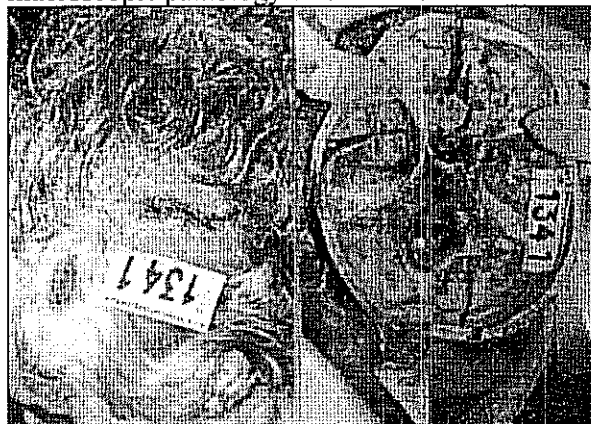


Figure 9. Blunt wounds of superficial skin in the skull, ecchymosis, hematoma and fracture were seen in an old man

Macroscopic pathology upon examination of the heart exposed hypertrophy, aneurisms, minimal to severe obstructive atherosclerotic changes in the coronary arteries, minimal to diffuse whitish color changes in the myocardium in some cases while no changes were observed in some.

Examination of the lungs showed macroscopic pathological changes like edema, increase in weight, and hyperemia in some cases while no changes were recorded in some. Examination of

the liver resulted in findings like stasis, macrovesicular fattening and hyperemia. Life-threatening macroscopic pathological changes could not be detected in other internal organs.

The following findings were noticed in microscopic evaluation of the organs and tissues of the cases: three cases with putrefaction showed autolysis at histological examination. Thrombosis in the lungs was observed in the case with the plaster bandage on the leg. Histological examination was missing in the files of cases where the cause of death was due to firearms and knives.

Additional findings included hyperemia-hemorrhage and epidural, subdural and subarachnoid hemorrhage in the brain, hypertrophy and fibrosis, chronic hypoxic changes and fibrous tissue bands at the myocardium and myocardial fibers, atherosclerotic changes resulting in 30%-100% obstructive lesions in the coronary arteries, edema, hyperemia and intra-alveolar hemorrhage in the lungs, microvesicular fattening in the liver, chronic pyelonephritic changes in the kidney and thermal changes in the skin.

Upon chemical examination of tissue, blood, urine and gastric content of the corpses no toxic, hypnotic and narcotic substances could be detected in 45 (59.%) cases while in 18 (23.7%) cases ethanol, naproxen, diclofenac, amytripti-

Table 2. Cause of death and distribution of gender

Cause of death	Gender		Total	Percent (%)
	Male	Female		
Firearm injury	3	2	5	6.6
Intoxication	8	5	13	17.1
Existing heart disease	25	1	26	34.2
Undetermined	16	4	20	26.5
Electric shock	2	0	2	2.6
Generalized trauma due to fall from height	1	0	1	1.3
Blunt head trauma	2	1	3	3.9
Pulmonary emboli due to femur fracture	1	0	1	1.3
Mechanical asphyxia due to hanging	1	0	1	1.3
Drowning (pool)	1	0	1	1.3
Sharp injuries	0	1	1	1.3
Hypovolemic shock due to sexual trauma	0	1	1	1.3
Drowning (sea)	0	1	1	1.3
Total (%)	60 (78.9)	16 (21.1)	76 (100.0)	100.0

lin, benzodiazepam, barbiturate and carboxyhemoglobin was identified although serum concentration of these substances were below toxic or fatal levels. In 13 cases, serum levels of ethanol, doxilamine, sertaline, codeine, heroin, morphine, amitriptilin were toxic and reported as the cause of death.

Heart disease was the cause of death in 26 (34.2%) cases. Cause of death could not be determined in 20 (26.3%) cases and in nine of them a decay of the corpse was reported. In addition, causes of death were reported as intoxication in 13 cases, firearm injury in five cases, electric shock in two cases, fall from height in one case, blunt head trauma in three cases, pulmonary emboli due to femur fracture in one case, mechanical asphyxia resulting from hanging in one case, mechanical asphyxia due to drowning in a pool and in the sea in two cases, separation of the head with a sharp instrument in one case and hypovolemic shock after sexual intercourse in one case. Cause of death and distribution of gender are shown (Table 2).

The serum levels of ethanol, doxylamine, sertaline, codeine, heroin, morphine, and amytriptilin were found fatally high in 13 (17.1%) cases after chemical examination. Association of cause of death and chemical examination results showed statistically significance (Table 3).

Discussion

Death can occasionally occur in hotels during accommodation [8-17]. Hotel fires have resulted in death for many people. Three major hotel fires have occurred in Turkey. A fire in the Hotel Washington in Istanbul has caused 36 deaths and 59 injured in 1983, a fire in Hotel Tozbey, Istanbul has caused 18 deaths and 41 injured in 1993 and an incendiary fire in the Hotel Madimak in Sivas has caused 37 deaths [8,9]. Our cases are not related with these major fires or raised fires due to our database foundation date behind these events. We are not sure how many of these cases were sent for autopsy to our council.

However, a national regulation on fire was instituted in our country after these major fires. This regulation aims to assure preventative or protective measures that are needed as a result of a risk assessment and necessary training, organization and inspection in order to safeguard lives and property in the event of a fire in all kinds of buildings, enterprises and constructions owned by institutional, private and real persons [18].

In 34.2% of our cases the First Specialization Board of the Council of Forensic Medicine reported a condition of "existing disease". This condition is used in cases where results of scene investigations, witness statements and clinical and autopsy findings are missing or confusing and the cause of death is undeterminable or in cases where

Table 3. Cause of death and chemical examination results

Substance	Cause of death						Total
	Firearms	Intoxication	Disease	Undetermined	Drowning	Trauma	
Doxylamine	-	1	-	-	-	-	1
Sertaline	-	1	-	-	-	-	1
Laroxil (Amytriptilin)	-	3	-	1	-	-	4
Barbiturate in the urine	-	-	1	-	-	-	1
Ethyl alcohol	1	4	3	3	1	2	14
Codeine	-	1	-	-	-	-	1
Heroin	-	1	-	-	-	-	1
Morphine	-	2	-	-	-	-	2
Naproxen	-	-	-	1	-	-	1
Diclofenac	-	-	-	1	-	-	1
Carboxy- hemoglobin (COHb)	-	-	2	-	-	-	2
Benzodiazepam derivates	-	-	2	-	-	-	2
Total	1	13	8	6	1	2	31(%40.8)

other causes of death were excluded. These cases are considered as natural deaths. For example, in persons with an illness like heart disease with the likelihood of sudden death, a record of previous diseases during check-in could help to give information to the health personnel in case of an emergency or in case of a missing person.

Medical point of view requires the distinction of trauma or intoxication while regarding the law the distinction of accident, murder and suicide is important in a case of death. This enables an opportunity for judicial bodies.

The cause of death was undetermined in 26.5% of our cases. In these cases, where the cause of death could not be linked to a consequence of trauma, intoxication or existing disease, a termination of "undetermined cause and mechanism of death" is reported by our Council. Decay of the corps or indistinct pathology is the reason for this result in most of these cases. Problems in identifying cause of death in our country are mainly due to a lack of standard procedure and deficiencies in practice.

The percentage of deaths, which are due to guns, varies greatly in different parts of the world, mainly due to availability of weapons. There is a substantial and growing literature on the epidemiology of firearm related deaths. Many of these directly address the issue of the impact of gun control on death rates [19-24]. The cause of death in 6.6% of the cases was the result of handgun injury and within these cases; four Turkish and two foreign nationalities were recorded.

Stricter firearm legislation and control of guns similar to airport security measures or proper storing of firearms at stopover places are required, which might help to reduce unnecessary deaths and injuries related with firearms.

The cause of death was the result of electric shock in two cases emphasizing the importance of control on old electricity wirings and replacements in regular periods.

An adult case was found dead in the sea after resting on the beach. Besides, a three years old child with foreign nationality accommodating with his grandmother was drowned in the pool. Mothers, fathers or young attendants energetic enough to keep in step with them should supervise children.

Carbon monoxide (CO) poisoning at hotels, motels, and resorts was described [25,26]. The cause of death in 13 (17.1%) of our cases of intoxications was related to medications but carbon monoxide poisoning was not reported. Extraordinary cases such as body-packing as cause of unexpected sudden death may occur everywhere, the circumstances being uncharacteristic. The cases demonstrate, for example, different localities such as a private home, a motorway service area, a hotel room and a backyard [27]. Intoxication due to cocaine was not detected between our cases but body-packing syndrome in one case was reported as the cause of death in Turkey [28].

On July 25, 2000, around 4.30 pm, a Concorde airplane with 109 people on board, 96 of who were of German nationality, crashed onto a hotel situated near the town of Gonesse. The accident resulted in 113 deaths (100 passengers, 9 crew members, and 4 hotel employees) and six were injured [29]. Mass deaths due to airplane accident or fire were not reported as causes of death in our series. As a result, travel health advisers should include advice concerning personal safety abroad and tourist authorities should endeavor to promote and advocate for tourism safety [11].

Hotel entry records should be detailed and information about existing diseases and medications used should be recorded for every tourist at check-in in order to prevent deaths at stopover places. Security precautions similar to the airports at the entrance at stopover places could be suggested considering firearms. Safety measures like periodic control of infrastructure and technical equipment by independent institutions to ensure renewal of old wiring and restoration of aged buildings, in addition to precautions like barricades and lifeguards at the beaches and pools are important. As a result, we believe that in addition to safety measures in parts of the hotels serving for amusement and relaxation, employing experts in their fields and legislative measures ensuring health care service for employees and customers could result in a decrease in injuries and deaths.

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