

Robbery-Related Homicides of Taxi Drivers in Three Big Cities of Turkey Between 1996 and 2006

Türkiye'nin Üç Büyük Kentinde Taksi Şoförlerine Yönelik Gasp Amaçlı Cinayetler, 1996-2006

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Objectives: Taxi drivers have the highest prevalence of work-related homicides and the underlying motive for most homicides is robbery. The objectives of this study were to reveal the features of robbery-related homicides of taxi drivers, to evaluate characteristics of murdered drivers and assailants, and to recommend preventive measures.

Patients and Methods: We reviewed autopsy, crime investigation, security, and death records about robbery-related murders of taxi drivers in the cities İstanbul, Ankara, and İzmir in Turkey between 1996 and 2006.

Results: There were 109 robbery-related murders of taxi drivers (all males; mean age 41.6±12 years). Most of the drivers were killed at night and in the evening (n=80, 90.9%; p<0.01) and in the suburbs (n=53, 52.48%; p<0.01). Firearms were the most frequently used weapons (n=60, 55.05%; p<0.01) and most of the fatal injuries were located on the head (n=61, 41.78%; p<0.01). Security measurements in taxicabs were not effective enough to prevent murders of taxi drivers.

Conclusion: Safety of taxi drivers can be achieved by utilization of technological safety devices, but an effective solution to this problem is the restriction of civil armament.

Key words: Homicide; occupational safety; workplace; violence.

Amaç: Taksi şoförü cinayetleri, meslekle ilişkili cinayetler arasında en yüksek yaygınlığa sahiptir ve bu cinayetlerin çoğunun altında yatan sebep gasptir. Sunulan çalışmanın amacı, gasp amaçlı taksi şoförü cinayetlerini, bu cinayetlerde yer alan kurban ve saldırganların özelliklerini araştırmak ve bu cinayetleri azaltabilecek güvenlik önlemlerini tanımlamaktır.

Hastalar ve Yöntemler: 1996-2006 yılları arasında İstanbul, Ankara ve İzmir şehirlerinde gasp amacıyla öldürülmüş taksi şoförlerine ait otopsi, olay yeri inceleme, güvenlik ve ölüm raporları incelendi.

Bulgular: Toplam 109 taksi şoförü (tümü erkek; ort. yaş 41.6±12) gasp amacıyla öldürülmüştü. Kurbanların çoğu gece ve akşam saatlerinde (n=80; %90.9) (p<0.01) ve kenar mahallelerde (n=53, %52.48), (p<0.01) öldürülmüştü. Ateşli silahlar en sık kullanılan silahlardı (n=60, %55.05; p<0.01) ve öldürücü yaraların çoğu baş bölgesindeydi (n=61, %41.78; p<0.01). Taksilerde bulunan güvenlik önlemleri, taksi şoförü cinayetlerinin önlenmesinde yeterli olmamıştı.

Sonuç: Teknolojik güvenlik cihazlarının kullanımı taksi şoförlerinin güvenliğinin sağlanmasında önemli bir yer tutmakla birlikte, bu problemin kesin çözümünün silahlanmanın önlenmesi ile mümkün olabileceğini düşünmekteyiz.

Anahtar sözcükler: Cinayet; mesleksel güvenlik; işyeri; şiddet.

Violence at work is a serious public problem in the world and the most serious type of occupational violence is occupational homicide.^[1,2] Occupational homicide is the second leading cause of death at work after motor vehicle crashes in the United States.^[3] According to data from National Institute for Occupational Safety and Health (NIOSH), 9,937 workplace homicides occurred during the 13-year period from 1980 through 1992, with an average workplace homicide rate of 0.7/100,000 workers.^[4-6] Work settings identified at high risk include convenience stores, gasoline stations, grocery stores, jewellers', bars, nightclubs, restaurants, work environments for journalists, detective/protective services, justice/public order establishments, hotels/motels and taxicab services.^[1,3,5,6]

Workers in the taxicab industry have the highest prevalence of work-related homicide.^[1,2,4-6] In recent studies, the prevalence of homicides among taxi drivers has been reported to be between 17.9 and 43 per 100,000 workers a year.^[1,5,7] Homicide risk factors for taxi drivers are working in public, dealing with and carrying a lot of cash, working alone, working at night and working in high-crime areas.^[1,8] The underlying motive for most homicides in taxicab drivers is robbery.^[9] Sygnatur and Toscano^[5] reported that robbery was associated with occupational homicides in 67% of the cases.

One of the biggest barriers to understanding the problem of homicide and/or robbery of taxi drivers is the lack of data specifically collected on this crime.^[9] In this study, we aimed to define features of robbery-related homicides of taxi drivers in three big cities of Turkey, to evaluate characteristics of the murdered taxi drivers and assailants, and to make recommendations about preventive measures.

PATIENTS AND METHODS

In this study, we reviewed robbery-related homicides of taxi drivers in three big cities of Turkey, namely İstanbul, Ankara and İzmir, over an 11-year-period from 1996 through 2006. Data were collected from autopsy reports obtained from İstanbul Center, İzmir and Ankara Branches of the Council of Forensic Medicine, crime scene investigation reports and crime statistics obtained from Police Centre of Manisa, security and death records obtained from the Turkey Federation of Professional Drivers. Homicides caused by other reasons were excluded from the study.

Chi-square test was used for statistical analyses.

RESULTS

There were a total of 28,015 taxicabs in İstanbul, Ankara and İzmir in Turkey. Of 28,015 taxicabs, 17,384 were in İstanbul, 8,297 were in Ankara and 2,615 were in İzmir. The number of taxicabs was restricted in these big cities and it has not increased in the last decade. The number of taxi drivers was estimated as twice of the number of taxicabs but the exact number of taxi drivers was not

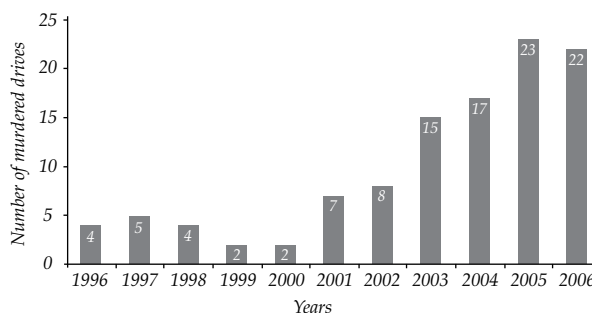


Fig. 1. Distribution of murdered drivers by years.

known because nearly half of the taxi drivers are not on social security in Turkey and taxi driving is usually their secondary occupation; that is, they work as taxi drivers after work hours or after retirement.

A total of 201 taxi drivers were murdered in İstanbul, Ankara and İzmir in Turkey between 1996 and 2006. The causes of homicides were robbery in 109 cases (54.2%) and other reasons such as honor, disagreement and quarrel in 92 (45.8%) cases. The number of robbery-related homicides of taxi drivers has had a tendency to increase since 2002 (p<0.01) (Fig. 1).

Table 1. The features of murdered drivers and homicides

Age groups of murdered drivers	n=109	%
20-29 years	25	22.94
30-39 years	22	20.18
40-49 years	25	22.94
50-59 years	32	29.36
60 and more years	5	4.59
Marital status of murdered drivers	n=92*	%
Married	85	92.39
Single	7	7.61
Seasons of assaults	n=109	%
Spring	39	35.78
Summer	31	28.44
Autumn	17	15.60
Winter	22	20.18
Assault times	n=88**	%
00.00-05.59 am	51	57.95
06.00-11.59 am	7	7.95
12.00-05.59 pm	1	1.14
06.00-11.59 pm	29	32.95
Homicide locations	n=109	%
Inside the taxicab	76	69.72
Out of the taxicab	33	30.28
Homicide scenes	n=101***	%
Urban	15	14.85
Suburban	53	52.48
Rural	33	32.67

(*) Marital status of victims in 17 cases, (**) assault times in 21 cases and (***) homicide scenes in 9 cases were not recorded.

Table 2. Distribution of number of fatal injuries by causes of deaths in 109 cases

Number of fatal injuries	Causes of deaths			
	Firearm injury (n=60)	Knives and other sharp objects injury (n=47)	Strangulation (n=2)	Total (n=109)
1	56	38	2	96
2	2	4	–	6
3	–	2	–	2
4	1	1	–	2
5	1	–	–	1
8	–	1	–	1
11	–	1	–	1

Taxi drivers at the time of assaults were aged between 23 years and 64 years (mean 41.6±12 years). Most of the drivers (n=32, 29.4%) were aged 50-59 years (p<0.01) (Table 1). Although there were seven female taxi drivers in three big cities recorded on social security between 1996 and 2006, all murdered drivers were male in this study. Data about marital status were missing in 17 cases. Out of 92 drivers, 85 (92.4%) were married and seven (7.6%) were single (p<0.01) (Table 1).

The majority of the drivers (n=39, 35.8%) were exposed to assaults in spring (Table 1). Time of assault could not be determined in 21 cases. Most of the drivers were killed at night and in the evening (n=80, 90.9%) (p<0.01) (Table 1).

Out of 109 taxi drivers, 76 (69.7%) were murdered inside the taxicab and 33 (30.3%) outside the taxicab (p<0.01) (Table 1). Data about homicide scenes were missing in eight cases. Homicide scenes were suburban regions for mostly homicides (n=53, 52.5%) (p<0.01) (Table 1).

Table 3. Distribution of 146 fatal injuries by causes of deaths and body parts

Body regions of fatal injuries	Causes of deaths			
	Firearm injury	Knives and other sharp objects injury	Strangulation	Total
Head	60	1	0	61
Front side of the head and face	7	1	0	8
Right side of the head	25	0	0	25
Left side of the head	19	0	0	19
Back side of the head	9	0	0	9
Neck	2	2	2	32
Front side of the neck	0	11*	0	11
Left lateral side of the neck	0	5	0	5
Right lateral side of the neck	0	11**	0	11
Back of the neck	2	1	0	3
Around the neck	0	0	2	2
Thorax	6	31	0	37
Left front and lateral side of the thorax	2	21	0	23
Right front and lateral side of the thorax	0	9	0	9
Dorsal side of the thorax	4	1	0	5
Abdomen	1	13	0	14
Front and lateral walls of the abdomen	0	11	0	11
Back wall of the abdomen and gluteal region	1	1	0	2
Perineal region	0	1	0	1
Limbs	0	2	0	2
Right upper limb	0	2	0	2
Total	69	75	2	146

The knife injuries related to slaughter in (*) 3 cases and (**) 1 case.

Table 4. The features of assailants

	n=69*	%
Number of assailants		
One	29	42.03
Two	21	30.43
Three	17	24.64
Four	2	2.90
Age groups of assailants	n=130	%
Under 20 years	51	39.23
20-29 years	58	44.62
30 years or above	21	16.15
Gender of assailants	n=130	%
Male	127	97.69
Female	3	2.31

(*) Number of assailants couldn't be defined in 40 events.

Deaths were caused by firearm injuries in 55.1% (n=60), knives and other sharp objects in 43.1% (n=47) and strangulation in 1.9% (n=2) of the cases ($p<0.01$) (Table 2). In 96 cases (93.2%), there was only one fatal injury. The number of fatal injuries was more than one (between 2 and 11) in 13 cases (11.9%). Additionally, non-fatal injuries, abrasions and ecchymosis were associated with fatal injuries in 50 cases (45.9%). The distribution of fatal injuries by the cause of death is shown in Table 2.

There were a total of 146 fatal injuries in the bodies of 109 murdered drivers. Most of the fatal injuries were in the head (41.8%, n=61) and the thorax (25.3%, n=37) ($p<0.01$) (Table 3). The distribution of 146 fatal injuries by the cause of death and body parts is shown in Table 3. The head was injured in the majority of firearm-related deaths (n=60, 86.9%) whilst the thoracic region and neck were injured in the majority of stabbing-related deaths (n=59, 78.7%). Out of all stabbed drivers, four were slaughtered.

The firing range was distant in 24 (34.8%), close range in 37 (53.6%), near-contact and contact in eight (11.6%) murders by firearms ($p<0.001$). All shootings were committed with short-barrel firearms. Four firearms were pistols modified from air guns.

Additionally, the bodies of eight drivers (7.3%) and their cars were set on fire after the homicide. Autopsy of the burned corpses revealed that the cause of death was firearm injuries in six cases and stabbing in two cases.

Alcohol or drugs were not detected in blood samples and other samples obtained from the drivers.

The assailants were identified and arrested in 69 (63.3%) of the events. The number of assailants was one in 29 cases (42%), two in 21 cases (30.4%), three in 17 cases (24.6%) and four in two cases (2.9%) ($p<0.01$). One-hundred and thirty assailants were aged between 15 and 46 years (mean 23.7 ± 8.8 years). Most of the assailants (n=58, 44.6%) were aged 20-29 years ($p<0.01$) (Table 4). Three assailants (2.3%) were females. All assailants got

in the taxicabs as customers. Defendants in three events were held responsible for homicides of six taxi drivers.

There were two-way radios in all taxicabs and Global Positioning System (GPS) in 32 taxicabs (29.7%) at the time of assaults. There were no other security measures in any of the taxicabs.

DISCUSSION

Taxi drivers are at the highest or one of the highest risks of job-related homicide and assault.^[1,2,5-8] Taxi drivers are 36-60 times more likely to be murdered than workers in any other field.^[5,6,8,10] A thousand and sixty-three occupational homicides occurred among taxi drivers in the United States between 1980 and 2007.^[8] Robbery is the motive for more than half of all work-related homicides (80%).^[9] Loomis et al.^[3] reported that out of 105 occupational homicides, 60 (57.1%) were robbery-related.^[3] In the present study, 54.2% of the murders were robbery-related. The number of robbery-related homicides of taxi drivers has increased significantly after the general amnesty introduced in 2000 in Turkey.

The highest age-specific rates of occupational homicide were seen among workers aged 65 years and older.^[11] In a study carried out in the USA and Canada between 1980 and 1994, 35% of murdered taxicab drivers were 30-39 years, 25% were 40-49 years, 20% were 50-59 years and 16% were 20-29 years.^[12] In the present study, the mean age of the taxi drivers at the time of assaults was 41.6 ± 12 years and most of the drivers (n=32, 29.7%) were 50-59 years old. In Turkey, it is a well-established fact that civil servants generally have part-time jobs since their salaries are not enough to support their families. Taxi driving is one of the most frequently preferred part-time jobs since no other license is required from taxi drivers except driving license.

In the USA and Canada, the percentage of the murdered female taxi drivers was found to be 5%.^[12] All of the murdered taxi drivers in this study were males because almost all taxi drivers in Turkey are males.

Most taxi drivers were killed sometime between 00:00 a.m. - 5:59 a.m. (58%, n=51) and between 06:00 p.m. - 11:59 p.m. (33%, n=29). Rathbone^[12] reported that 82% of homicides of taxi drivers occurred between 06:00 p.m. and 05:59 a.m. These periods were defined as high-risk periods for homicide in all workers including taxi drivers.^[5,11]

According to Bureau of Justice Statistics Special Reports corrected by Warchol, 56.5% of workplace violence events occurred in cities, 14.6% in suburbs and 10.8% in rural areas.^[13] Magin et al.^[14] reported that work-related violence was a major problem in urban areas in Australia and that almost half of the job-related homicides occurred in metropolitan areas in the USA.^[15] However, suburbs were described as risky regions for taxi drivers.^[2] The results of this study showed that

suburbs and rural areas were riskier regions regarding the homicides. Silent and dark roads make assaults easier and these are not safe places for taxi drivers.

Rathbone^[12] reported that 94% of the homicides were committed inside the taxicab. In the present study, 69.7% of the taxi drivers were murdered inside the taxicab. It may be that taxi drivers are disadvantaged in terms of self-defence while driving.

Firearms are the most frequently used weapons in homicidal assaults to taxi drivers as well as in other occupational homicides. It has been reported that firearms were used between 75% and 84.6% of homicides in taxi drivers and other occupations respectively.^[4,6,12,13,16] The second most preferred weapons by assailants were knives and other sharp objects at the rates of 7.8% to 14.8%.^[4,6,12,13] Strangulation was reported to be another method of occupational homicide.^[4] In this study, firearms were the most frequently used weapons at the rate of 55%, which was lower than that reported in the literature. However, the rate of using knives and other sharp objects (43.1%) was higher than that reported in the literature. It may be that knives can be easily accessible, but that there are legal restrictions on having firearms. Strangulation was used in only two cases (1.8%) and fatal blunt trauma was not observed in this series.

In the present study, most of the fatal 146 injuries in 109 victims were located on the head (n=61, 41.8%). Rathbone^[12] reported that 74% of the murders had head and neck injuries. In the present study, 63.7% (n=93) of the drivers had head and neck injuries. In a study by Azmak et al.^[17] in 37 homicides in Edirne (Turkey), the fire ranging was distant in 26 cases (70.8%), close in six cases (16.2%), contact and near-contact in one case (2.7%), but the fire ranging was not determined in four cases (10.8%). The rates of close, near-contact and contact ranges in the present study (totally, 65.2%) were much higher than those reported by Azmak et al. The presence of more than one fatal injury in 13 drivers (11.9%) and the high rate of close range, near-contact and contact firing ranges among deaths by firearms might indicate the intention of the assailants to kill so as not to leave a witness behind. The assailants aimed to destroy proofs by setting the bodies and cars on fire in eight cases (7.3%).

Toxicological analysis of samples obtained from the murdered drivers revealed that none of them had alcohol or drugs before death.

According to a study reported by Rathbone,^[12] 47% of the assailants were alone during homicides, 91% of the assailants were males and 66% of them were under the age of 20. In the present study, the offenders were arrested in 63.3% of the events. The assailants were alone in 42% of the offences, and 97.7% of the assailants were males. Contrary to the results of the study by Rathbone from Canada,^[12] the offenders were younger

and 44.6% of them were aged 20-29 years. It may be that rates of unemployment especially among people aged 20-29 years differ between Turkey and Canada and the unemployment rate in Turkey is approximately twice the unemployment rate in Canada.^[18-20]

Taxi drivers are usually paid in cash, and by the end of their shift they often have a large amount of money. The fact that the drivers have the cash with them makes them a suitable target for robberies and murders.^[1,5,7-9] In recent years, advances in technology have promised new opportunities for the safety of drivers. Accepting credit cards for payment and therefore the amount of reducing cash may discourage robbers and protect taxi drivers against robberies.^[21] Bullet-proof barriers may reduce assaults and homicides. It has been reported that safety screens and shields helped to prevent 56% and 70% of assaults and robberies in taxis respectively. However, taxi owners and drivers do not prefer safety screens in that the screens may restrict air circulation, limit communication between drivers and passengers, do not provide sufficient security against assaults by front seat passengers, induce claustrophobia in small taxi-cabs, cause injuries to passengers during crashes and are costly.^[22] Two-way radios have been defined as the "lifeline" of drivers in taxicabs; however, two-way radios are not sufficient to prevent attacks when the drivers are out of the taxicabs.^[22,23] Emergency signs, silent alarms, dome light alarms, electric seats and other items were reported as other technological safety measures for preventing assaults of taxi drivers.^[21-23] Even Global Positioning Systems (GPS) may fail to prevent assaults, though they can help to find a stolen taxi and they can act as a deterrent on the assailants.^[21] Video or security digital cameras allow identification of offenders.^[22] Use of video or security digital cameras has reduced taxi crimes by half in Toronto, thanks to their dissuasive impact.^[21] A combination of technical interventions seems to offer the most promising solution to reduce the risks.^[22]

In this study, presence of two-way radios in all and Global Positioning System (GPS) in 32 (29.7%) of usurped taxicabs could not prevent robbery related homicides. There were no other security measures in any of the usurped taxicabs.

In this study, we aimed to show that taxi drivers have a very risky job and they frequently fall victim to robberies and many drivers were murdered by assailants during these robberies. Using big taxicabs with a separated driver cabin and technological preventative measures as mentioned above and prohibition of the passengers to sit in the front seat may reduce assaults targeting the taxi drivers. Further, we think that the restriction of civil armament would reduce this type of crime as well as other crimes when we consider the high rate of deaths caused by firearms and knives in this study.

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REFERENCES

1. Commission for Labor Cooperation. Violence at work in North America. [cited 2008 Jan 11] Available from: <http://www.naalc.org/english/pdf/violenceEN.pdf>
2. Mayhew C, Chappell D. Violence in the workplace. *Med J Aust* 2005;183:346-7.
3. Loomis D, Wolf SH, Runyan CW, Marshall SW, Butts JD. Homicide on the job: workplace and community determinants. *Am J Epidemiol* 2001;154:410-7.
4. National Institute for Occupational Safety and Health. Violence in the workplace. Risk factors and prevention strategies. [cited 2008 Jan 11] Available from: <http://www.cdc.gov/niosh/violcont.html>
5. Sygnatur EF, Toscano GA. Work-related homicides: the facts. *Compensation and Working Conditions* 2000;2:3-8
6. National Institute for Occupational Safety and Health. Preventing homicide in the workplace. [cited 2008 Jan 11] Available from: <http://www.cdc.gov/niosh/homicide.html>
7. Essenberg B, editor. Violence and stress at work in the transport sector. Geneva: International Labour Office; 2003.
8. Taxi-Library. Homicide prevention. [cited 2008 Jan 11] Available from: <http://www.taxi-library.org/safety.htm>
9. Smith MJ, editor. Robbery of taxi drivers: Problem-oriented guides for police problem-specific guides series, No: 34. U.S: Department of Justice; 2005.
10. Kabrick B. Criminal intent workplace violence. [cited 2008 Feb 6] Available from: http://www.taxi-library.org/Criminal_Intent_Workplace_Violence.htm
11. Davis H. Workplace homicides of Texas males. *Am J Public Health* 1987;77:1290-3.
12. Rathbone C. 606 taxicab driver homicides, United States and Canada 1980-1994. [cited 2008 Feb 6] Available from: <http://www.taxi-library.org/tables.htm>
13. Warchol G. Workplace violence 1992-96. *NCJ* 1998;168634:1-9.
14. Magin PJ, Adams J, Sibbritt DW, Joy E, Ireland MC. Experiences of occupational violence in Australian urban general practice: a cross-sectional study of GPs. *Med J Aust* 2005;183:352-6.
15. U.S. Department of Labor Occupational Safety and Health Administration. Workplace violence awareness and prevention facts and information. [cited 2008 Feb 6] Available from: http://www.osha.gov/workplace_violence/wrkplaceViolence.PartI.html
16. Kraus JF. Homicide while at work: persons, industries, and occupations at high risk. *Am J Public Health* 1987;77:1285-9.
17. Azmak D, Altun G, Bilgi S, Yilmaz A. Firearm fatalities in Edirne, 1984-1997. *Forensic Sci Int* 1998;95:231-9.
18. Turkish Statistical Institute. Labour force status by non-institutional population, years and sex. [cited 2008 Jun 26] Available from: http://www.tuik.gov.tr/PreIstatistikTablo.do?istab_id=542
19. Turkish Statistical Institute. Labour force status by non-institutional civilian population, years and sex. [cited 2008 Jun 26] Available from: http://www.tuik.gov.tr/PreIstatistikTablo.do?istab_id=569
20. Canada National Strategy Agency. Labour force survey. [cited 2008 Jun 26] Available from: <http://www.statcan.ca/english/Subjects/Labour/LFS/lfs-en.htm>
21. Department of Environment and Labour Occupational Health and Safety. Safety tips for taxi drivers. [cited 2008 Feb 6] Available from: <http://www.gov.nsw.gov.au/lwd/healthandsafety/docs/WorkplaceViolenceTaxi.pdf>
22. Mayhew C. Preventing assaults on taxi drivers in Australia. *Trends and Issues in Crime and Criminal Justice* 2000;179:1-6.
23. Eastaale PW, Wilson PR. Taxis. In: Eastaale PW, Wilson PR, editors. Preventing crime on transport. Canberra: Australian Institute of Criminology; 1991. p. 37-45.