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A Comparative and Comprehensive Analysis of Nonsexual Assaults

ABSTRACT: The aim of this study was to make a comparative and comprehensive analysis of nonsexual assaults in 488 medico-legal cases presented to Forensic Medicine Outpatient Clinic of Celal Bayar University Hospital (Manisa, Turkey), between 2005 and 2009. There were blunt force injuries (BFI) in 262 cases (53.7%), sharp force injuries (SFI) in 163 cases (33.4%), and firearm-related wounds (FRW) in 63 cases (12.9%). The results showed significant differences in the monthly distribution of assaults, localization of injuries, and severity of injuries depending on the types of assaults. Most of the injuries were localized to the face, head, and neck in BFI and SFI and to the lower limbs in FRW. The results of this study will help researchers to investigate characteristics of victims, offenders, and injuries and types of assaults because of nonsexual violence.

KEYWORDS: forensic science, nonsexual assault, blunt force injury, sharp force injury, firearm-related wound, injury localization

Each year, all around the world, more than a million people die and many more suffer nonfatal injuries because of violence, which has always been part of the human experience, although violence has been accepted as a crime that requires severe punishment in juridical systems in all countries (1,2). Interpersonal violence is one of the most serious types of violence and it involves “family and intimate partner violence” and “community violence” (1,3). Community violence refers to a wide range of events including shootings, sniper attacks, youth violence, random acts of violence, rape or sexual assault by strangers, and violence in institutional settings such as schools, workplaces, prisons, and nursing homes. It has been defined as exposure to acts of interpersonal violence committed by individuals who are not intimately related to the victim and generally takes place outside of home by offender (1,4).

Interpersonal violence may appear in various forms including “physical violence,” “sexual violence,” “psychological violence,” and “deprivation or neglect” (1,2). In sexual violence, almost all offenders are men; 73% of them are known victims, whereas most victims are children and adolescents ([5]; <http://www.rainn.org/get-information/statistics/sexual-assault-offenders>). Six of 10 of the assaults occur in the homes of victims or perpetrators and takes place between 6 PM and midnight in 43% of the cases ([5]; <http://www.rainn.org/get-information/statistics/sexual-assault-offenders>). Most of the injuries are located to the genital regions, medial aspects of the thighs and arms, breasts, and neck ([5]; <http://www.rainn.org/get-information/statistics/sexual-assault-offenders>). Nonsexual physical violence differs from other forms of violence in terms of some features such as profiles of the victims and offenders, place and time of assault, and localizations and features of injuries on the bodies of the victims (2).

Recent studies of physical violence have focused on homicide victims injured by firearms, sharp forces, and/or other instruments (6–10), comparison of fatal and nonfatal knife injuries (11), stab injuries in living victims (12,13), physical violence in relation to the sex of both assault victims and offenders (14), and medical consequences of violence in the community (15). There are a limited number of comparative studies on all types of assaults in living victims in the medical literature (16–19). They cover sexual assaults as well as nonsexual offenses. Nonsexual assaults have been considered a crime in almost all penal codes. They are defined as a crime in Article 86 of the Turkish Penal Code and a major crime including aggravating factors of criminal acts in Article 87 (20). In 2007, 235,666 individuals (334 per 100,000 population) were accused of nonsexual physical violence (Turkish population was 70,586,256 in 2007) according to the data collected by Turkish Statistical Institute (21).

In this study, based on data from medico-legal reports and records of the courts and hospitals about victims injured during nonsexual physical violence in the province of Manisa, Turkey, we aimed to carry out a retrospective, comparative, and comprehensive analysis of similarities and differences between different types of injuries because of nonsexual assaults in genders and age groups of the victims and the offenders, the months and the hours of the assaults, the number of the offenders in each event, the relations between the victim(s) and the offender(s), and the number, localizations, and features of the injuries on the body of the victims.

Methods

This is a retrospective review of cases of nonsexual physical violence referred to Forensic Medicine Outpatient Clinic of Celal Bayar University Hospital in Manisa, Turkey (according to 2009 census, the population of Manisa was 291,394, or 1,319,920 with neighboring districts).

One thousand four hundred and eighty-five medico-legal reports were prepared in the outpatient clinic between January 1, 2005 and

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December 31, 2009. Of 1485 medico-legal reports, 488 (32.9%) were about nonsexual physical violence.

In this study, all the medico-legal reports prepared by Forensic Medicine Outpatient Clinic of Celal Bayar University Hospital were reviewed and injuries of the victims exposed to nonsexual physical violence were classified into three groups: Group 1: sharp force injuries (SFI), Group 2: firearm-related wounds (FRW), and Group 3: blunt force injuries (BFI). Injuries caused by physical violence such as beating with bare body regions like fists and the head, open handed hitting, scratching, and kicking were assigned into the BFI group. Thirty-two cases of other injuries such as human bite injuries and burns were not included in this study. There was not any case of survival strangulation in this series.

Additionally, detailed information about crime scenes and suspects were obtained from statements of the victims, suspects and witnesses, crime scene investigation reports, and other information in the records of the courts and the hospitals. Data were analyzed in terms of genders and age groups of the victims and the offenders, months and hours of the assaults, scenes of the assaults; the number of the offenders, alcohol consumption of the victims and the offenders, the relationship between the victims and the offenders, the number, locations, and features of the injuries on the bodies of the victims, and the results of the medico-legal evaluation.

Statistical analyses were made with chi-square, Kolmogorov-Smirnov, and Fisher's exact tests. Results were considered statistically significant when the *p*-value was ≤ 0.05 .

Results

Four hundred and eighty-eight cases of injuries because of nonsexual assaults presented to Forensic Medicine Outpatient Clinic of the Celal Bayar University Hospital between January 1, 2005 and December 31, 2009. There were 262 cases (53.7%) in the BFI group, 163 cases (33.4%) in SFI group, and 63 cases (12.9%) in FRW group.

Of 488 cases, 88.1% (*n* = 430) were men and 11.9% (*n* = 58) were women. The percentages of male and female victims were 82.1% (*n* = 215) and 17.9% (*n* = 47) in the BFI group, 96.3%

(*n* = 157) and 3.7% (*n* = 6) in SFI group, 92.1% (*n* = 58) and 7.9% (*n* = 5) in FRW group, respectively.

The mean ages were 32.1 ± 12.4 years for all victims combined, 33.4 ± 13.5 years in the BFI group, 30.3 ± 11.2 years in SFI group, and 31.6 ± 9.8 years in FRW group. More than a half of all victims as well as those in each group were aged between 20 and 40 (Table 1).

All cases combined, the assaults made two peaks, one in October (*n* = 57; 11.7%) and one in July (*n* = 56; 11.5%). Assaults peaked in July in the BFI group (*n* = 42; 16%), in October in SFI group (*n* = 27; 16.6%), and in January in FRW group (*n* = 10; 15.9%) (Fig. 1).

There was a trend increase in the number of assaults after mid-day, reaching a peak between 9 PM and midnight but decreasing to its minimum between 3 and 6 AM both in all cases combined and in each group (Fig. 2).

Data about the victims' blood alcohol concentrations were available in 339 cases. Of these 339 cases, 72 (21.2%) had alcohol in their blood. Blood alcohol concentrations of intoxicated victims were under 1 g/L in 35 cases (48.6%), between 1 and 2 g/L in 26 cases (36.1%), between 2 and 3 g/L in nine cases (12.5%) and exceeded 3.0 g/L in only two cases (2.8%). According to Article 97 of Turkish Road Traffic Regulation, the legal limit of blood alcohol concentration is 0.5 g/L for ordinary drivers and 0 g/L for professional drivers (<http://www.mevzuat.adalet.gov.tr/html/20611.html>).

Most of the assaults occurred in the streets in each group. The second most frequent scene of assault was victims' or their relatives' homes and areas surrounding homes like gardens, car parks, and inside the apartment buildings. In this study, coffee houses, tea gardens, pubs, restaurants, schools, and wedding rooms were the places where assaults rarely occurred (Table 2).

In 51 assault cases (10.4%), the offenders could not be identified by the police officers. There were 691 offenders in 437 assaults (90.6%). Most of the victims (*n* = 308; 70.5%) were assaulted by a single offender. The number of offenders in each assault case is shown in Table 3. Of 691 offenders, 662 (95.8%) were men and 29 (4.2%) were women. The offenders were aged between 11 and

TABLE 1—Ages of victims.

	BFI Group (Range: 6–73 years old)		SFI Group (Range: 12–63 years old)		FRW Group (Range: 1–60 years old)		Total (Range: 1–73 years old)	
Mean Age								
Mean age	33.4		30.3		31.6		32.1	
SD	13.5		11.2		9.8		12.4	
Mean age of women	34.5		30.8		28.6		33.7	
SD	11.9		7.1		21.8		12.5	
Mean age of men	33.1		30.3		31.9		31.9	
SD	13.8		11.3		8.4		12.4	
	BFI Group		SFI Group		FRW Group		Total	
Age-groups	<i>n</i> = 262	%	<i>n</i> = 163	%	<i>n</i> = 63	%	<i>n</i> = 488	%
0–9	4	1.5	0	0	1	1.6	5	1.0
10–19	40	15.3	37	22.7	4	6.4	81	16.6
20–29	68	26.0	44	27.0	20	31.7	132	27.1
30–39	64	24.4	48	29.5	29	46.0	141	28.9
40–49	51	19.5	24	14.7	6	9.5	81	16.6
50–59	27	10.3	8	4.9	2	3.2	37	7.6
60–69	5	1.9	2	1.2	1	1.6	8	1.6
70–79	3	1.1	0	0	0	0	3	0.6
<i>p</i>	<0.005		<0.005		<0.005		<0.005	

BFI, blunt force injuries; FRW, firearm-related wounds; SFI, sharp force injuries.

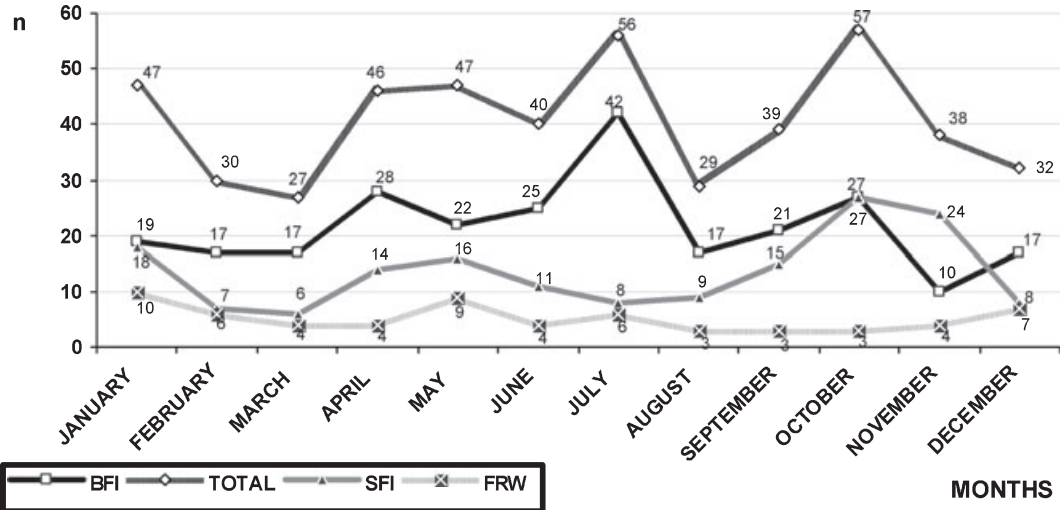


FIG. 1—The distribution of assaults by months.

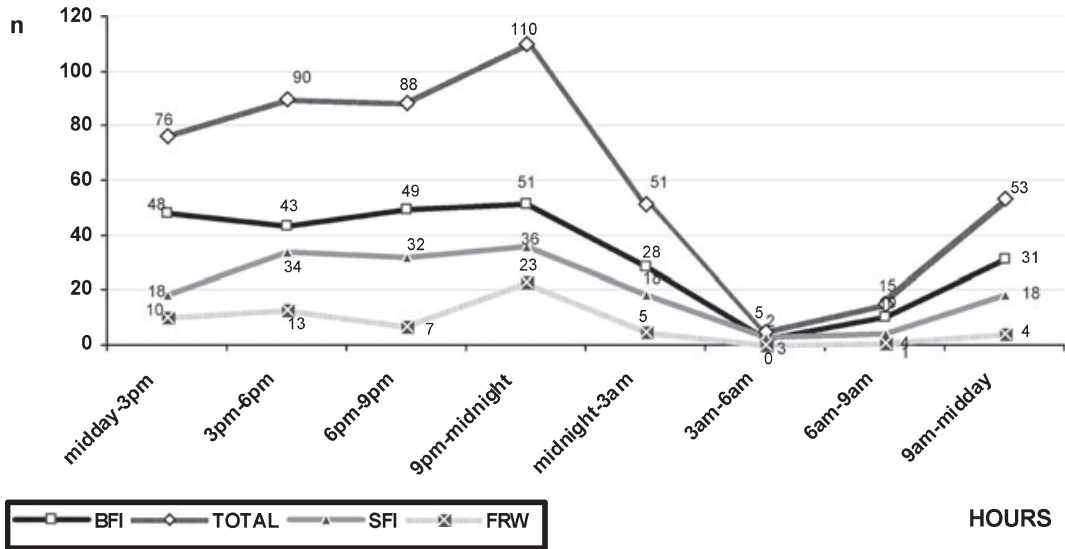


FIG. 2—The distribution of assaults by incident hours.

TABLE 2—The distribution of assaults with respect to the assault scenes.

Scene	BFI		SFI		FRW		TOTAL	
	n = 262	%	n = 163	%	n = 63	%	n = 488	%
Street	94	35.9	61	37.4	16	25.4	171	35.0
Home and its vicinity	74	28.2	26	15.9	14	22.2	114	23.4
Work place and its vicinity	35	13.4	16	9.8	11	17.5	65	13.3
Field/land/park	18	6.9	14	8.6	9	14.2	38	7.8
Coffee house and tea garden	14	5.3	12	7.4	1	1.6	27	5.5
Pub-Restaurant	5	1.9	12	7.4	3	4.8	20	4.1
School	13	5.0	6	3.7	1	1.6	20	4.1
Wedding room	4	1.5	10	6.1	1	1.6	15	3.1
Others	5	1.9	6	3.7	7	11.1	18	3.7
<i>p</i>	<0.005		<0.005		<0.005		<0.005	

BFI, blunt force injuries; FRW, firearm-related wounds; SFI, sharp force injuries.

67 (mean age: 32.1 ± 10.8), with the majority of them being in the 25- to 34-year-old age-group (n = 247; 35.7%) (Table 3).

The offenders' alcohol consumption was determined on the basis of the court files and police records. Of the offenders, 36.8% (n = 254) had alcohol intake. Blood alcohol concentrations could not be evaluated because data about alcohol concentrations were not recorded in quantitative values in most of the files.

While 386 (55.9%) offenders were known by the victims before the event, 305 (44.1%) of them were strangers (Fig. 3).

There were a total of 1459 injuries in 488 victims. The number of injuries per victim with respect to the study groups is shown in Fig. 4. Of 950 injuries in the BFI group, 453 (47.7%) were because of beating with fists, hitting with open hand, or scratching. The majority of the injuries was inflicted by knives or penknives in the SFI group (n = 343; 84.7%) and handguns in the FRW group (n = 74; 71.2%) (Table 4).

Soft-tissue injuries comprised the vast majority of injuries in all groups (n = 1168; 80.1%). In fact, soft-tissue injuries accounted for

TABLE 3—The distribution of offenders identified by their victims according to study groups and age groups.

Number of Offenders in Each Assault	BFI		SFI		FRW		Total	
	n = 260	%	n = 130	%	n = 47	%	n = 437	%
1	184	70.8	87	66.9	37	78.7	308	70.5
2	39	15.0	23	17.7	6	12.8	68	15.6
3	22	8.5	9	6.9	4	8.5	35	8.0
4	5	1.9	6	4.6	0	0	11	2.6
5	2	0.8	2	1.5	0	0	4	0.9
6	3	1.1	1	0.8	0	0	4	0.9
7	5	1.9	0	0	0	0	5	1.1
8	0	0	1	0.8	0	0	1	0.2
11	0	0	1	0.8	0	0	1	0.2
p	<0.005		<0.005		<0.005		<0.005	

Age-Groups of Offenders	BFI		SFI		FRW		Total	
	n = 411	%	n = 219	%	n = 61	%	n = 691	%
≤14	1	0.2	0	0	0	0	1	0.2
15–24	118	28.7	66	30.1	11	18.0	195	28.2
25–34	137	33.4	84	38.4	26	42.6	247	35.8
35–44	97	23.6	46	21.0	14	23.0	157	22.7
45–54	40	9.7	22	10.0	7	11.5	69	9.9
55–64	13	3.2	1	0.5	2	3.3	16	2.3
65≤	5	1.2	0	0	1	1.6	6	0.9
p	<0.005		<0.005		<0.005		<0.005	

BFI, blunt force injuries; FRW, firearm-related wounds; SFI, sharp force injuries.

84.1% (n = 799), 75.3% (n = 305), and 61.5% (n = 64) of the injuries in the BFI, SFI, and FRW groups, respectively (Table 5).

There were bone fractures in 154 (10.5%) cases; 83.8% percent (n = 129) of bone fractures was in the BFI group. The frequencies of bone fractures in each group were found to be 13.6% in the BFI group, 18.3% in the FRW group, and 1.5% in the SFI group, respectively (Table 5).

One hundred and thirty-seven cases (9.4%) had visceral organ and/or vessel injuries. The FRW and SFI groups had higher rates of these injuries (32.8% and 30.8%, respectively). The frequency of visceral organ and/or vessel injuries in the BFI group was 11.7% (Table 5).

The order of frequency of the locations of the injuries were the face, head, and neck region (n = 579; 61.0%), upper limbs (n = 174; 18.3%), lower limbs (n = 112; 11.8%), thoracic region (n = 66; 6.9%), and abdominal, genital, and anal regions (n = 19; 2.0%) in the BFI group; face, head, and neck region (n = 92; 22.7%), thoracic region (n = 91; 22.5%), upper limbs (n = 80; 19.8%), abdominal, genital, and anal regions (n = 73; 18.0%), and lower limbs (n = 69; 17.0%) in the SFI group; lower limbs (n = 64; 61.5%), abdominal, genital, and anal regions (n = 15; 14.4%), face, head, and neck region (n = 10, 9.6%), upper limbs (n = 9; 8.7%), and thoracic region (n = 6; 5.8%) in the FRW group. When all cases were pooled, the order was face, head, and neck region (n = 681; 46.7%), upper limbs (n = 263; 18.0%), lower limbs (n = 245; 16.8%), thoracic region (n = 163; 11.2%), and abdominal, genital, and anal regions (n = 107; 7.3%) (Table 5).

Among all cases, the majority of bone fractures were located in the face, head, and neck region (60.4%). This was also true in the BFI group (70.5%). They were located in the lower limbs in the FRW group (52.6%). There were only two rib and four phalanx cuts in the SFI group (Table 5).

Most frequently affected visceral organs and/or vessels were intracranial organs and/or vessels in the BFI group (n = 15; 68.2%), intrathoracic organs and/or vessels in the SFI group (n = 39; 41.5%), intra-abdominal organs and/or vessels in the FRW group (n = 9; 42.9%), and intra-abdominal organs and/or vessels (n = 46; 33.6%) when all cases were combined (Table 5).

According to medico-legal evaluations of the victims in accordance with the Turkish Penal Code, the frequency of the injuries with a severity level of “Does not improve with simple medical treatment” ranged between 39.9% and 43.3% in all cases combined and in each group separately (Table 6). The victims most frequently exposed to life-threatening acts were in the SFI group (n = 63; 38.7%), followed by the FRW (n = 14; 22.2%) and the BFI groups (n = 20; 7.6%). The frequencies of permanent disfigurement and functional weakness in an organ were the highest in the SFI group (12.3% and 4.3%, respectively), and the frequency of organ loss was highest in the FRW group (3.2%). There was no data available as to whether any victims died as a result of injuries sustained during the assault or not.

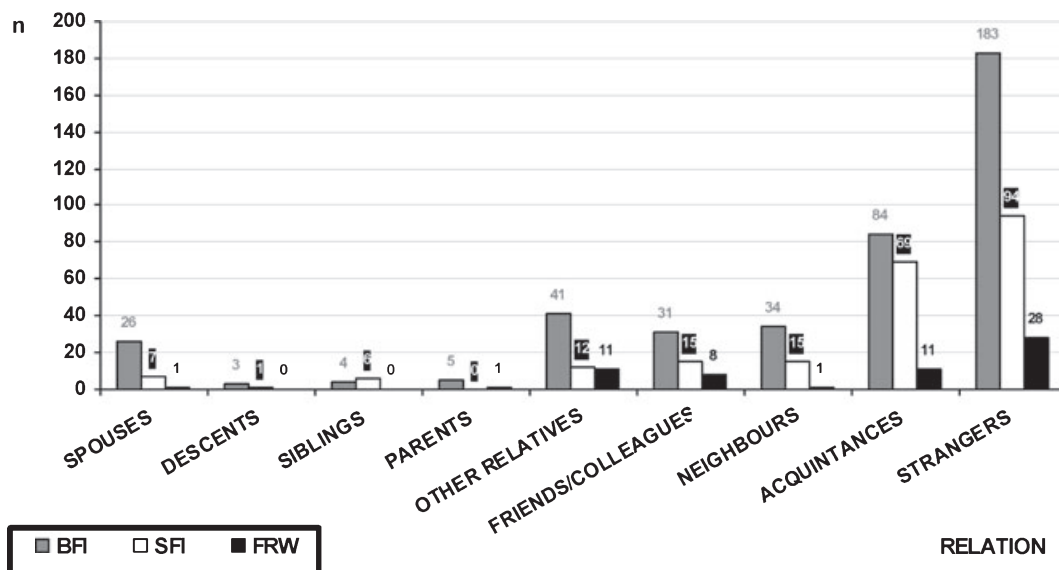


FIG. 3—The relationship between victims and offenders.

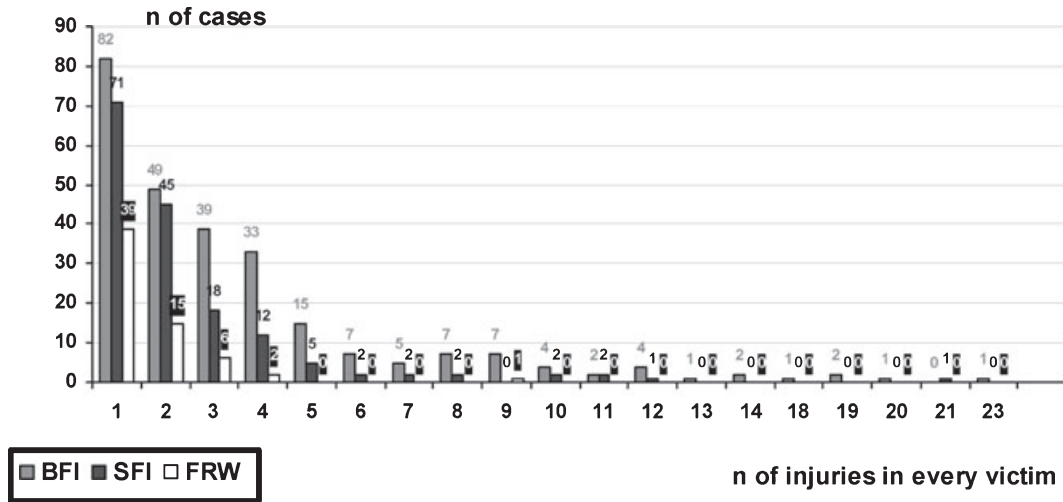


FIG. 4—The number of injuries in each case.

TABLE 4—Distribution of assault methods by study groups.

Assault Methods	n	%
BFI Group (n = 950)		
Beating by fists, open handed hitting, or scratching	453	47.7
Beating by a cane or iron bar	287	30.2
Beating by kicking	67	7.0
Beating by a stone	32	3.4
Beating by a bottle	30	3.2
Beating by a pistol grip or rifle butt	30	3.2
Intentional collision by a car or tractor	11	1.2
Beating by an ashtray	7	0.7
Tossing by head butt	6	0.6
Beating by a hammer	3	0.3
Beating by a belt or chain	2	0.2
Beating by other blunt objects	22	2.3
<i>p</i>	<0.005	
SFI Group (n = 405)		
Injured by a knife or penknife	343	84.7
Injured by a broken bottle or glass	27	6.7
Injured by a garden scissor or a garden rake	18	4.4
Injured by a falcata	5	1.2
Injured by a razor blade	5	1.2
Injured by a chopping knife	5	1.2
Injured by a bayonet	1	0.3
Injured by a box cutter	1	0.3
<i>p</i>	<0.005	
FRW Group (n = 104)		
Injured by a handgun	74	71.2
Injured by a shotgun	28	26.9
Injured by a blank firing gun	2	1.9
<i>p</i>	<0.005	

BFI, blunt force injuries; FRW, firearm-related wounds; SFI, sharp force injuries.

Discussion

In this comparative and comprehensive analysis of similarities and differences between different types of nonsexual assaults in 488 victims, we found that the majority of nonsexual assaults occurred in the BFI group (n = 262; 53.7%), followed by the SFI (n = 163; 33.4%) and the FRW groups (n = 63; 12.9%), (p < 0.001). The percentages of the victims injured by physical

violence or blunt objects were reported to be 83% in 1986 and 63% in 1996 by Kompus (16). Rodge et al. reported that 33% of homicides were committed by sharp force (7). Also, Schmidt documented that 10–20% of the total annual number of clinical forensic examinations was associated with SFI and that SFI were considered as the second most common cause of injuries after blunt traumas (22). In a recent study about homicide cases of children and adolescents from 4 to 19 years of age, it was reported that the two most frequently encountered methods of homicide were firearm and sharp force, each at 27% of cases, followed by asphyxia (23%), blunt force (20%), and intoxication (3%) (23).

In the present study, the majority of the nonsexual assault victims were men (overall n = 430; 88.1%) in all groups, with the highest frequency being in the SFI group (n = 157; 96.3%). The number of male nonsexual assault victims did not significantly differ between the groups (p > 0.5). It has been reported in the literature that the frequency of male homicide victims who were stabbed to death ranged between 65% and 85% (7,11,24,25) and that the frequency of male homicide victims who sustained firearm injuries was 84% (26). It has been noted that 85–96% of the patients with stab wounds (11,13) and 79% of the victims who were subjected to any type of physical violence (14) survived. It was noteworthy that the frequency of male victims in Turkey was higher than other countries.

The mean age of the female victims was higher than the male victims except in the FRW group (p > 0.5; Table 1). More than half of all victims and those in each group were aged between 20 and 39 (p < 0.001), which is consistent with the results of aforementioned reports (11,13,14,18,24–26).

Morken and Linaker reported that the distribution of violent incidents by months showed a significant variation (27). They showed that the frequency curve had one significant peak in May through June and another significant peak in October through November with a minimum daily frequency of 28.7 in March and a maximum daily frequency of 35.1 in June in their study performed in Norway. A significant seasonal variation with a peak in August was found in homicide cases in the U.S.A. (28). Among sexual assault victims in Chile, statistically significant differences were also shown between spring and autumn, with peaks in November and June, (29). Tiihonen et al. (30) argued that this seasonal variation and the correlation between the monthly occurrence of homicides and violent suicides might be related to circannual rhythms of serotonin transmission. In the present study, the assaults in the BFI and

TABLE 5—Severity and localizations of all injuries and the distribution of bone fractures and visceral organ and/or vessel injuries by study groups.

Severity of Injuries	All Injuries							
	BFI		SFI		FRW		Total	
	n = 950	%	n = 405	%	n = 104	%	n = 1459	%
Soft-tissue injuries	799	84.1	305	75.3	64	61.5	1168	80.1
Bone fractures	129	13.6	6	1.5	19	18.3	154	10.5
Visceral organ and/or vessel injuries	22	2.3	94	23.2	21	20.2	137	9.4

Localization of Injuries	All Injuries							
	BFI		SFI		FRW		Total	
	n = 950	%	n = 405	%	n = 104	%	n = 1459	%
Face and head and neck regions	579	61.0	92	22.7	10	9.6	681	46.7
Face	469		61		5		535	
Head	94		9		4		107	
Neck and nape	16		22		1		39	
Upper limbs	174	18.3	80	19.8	9	8.7	263	18.0
Arms	85		32		5		122	
Forearms	46		18		3		67	
Hands	43		30		1		74	
Lower limbs	112	11.8	69	17.0	64	61.5	245	16.8
Femoral regions	69		56		36		161	
Shanks	38		13		26		77	
Feet	5		0		2		7	
Thoracic regions	66	6.9	91	22.5	6	5.8	163	11.2
Front and side walls of thorax	23		51		2		76	
Back wall of thorax	43		40		4		87	
Abdominal and genital and anal regions	19	2.0	73	18.0	15	14.4	107	7.3
Abdominal region	7		42		10		59	
Lumbar region	5		10		3		18	
Genital region	1		1		1		3	
Buttocks and anus	6		20		1		27	

Localization of Injuries	Bone Fractures							
	BFI		SFI		FRW		Total	
	n = 129	%	n = 6	%	n = 19	%	n = 154	%
Face and head and neck regions	91	70.5	0	0	2	10.5	93	60.4
Thoracic regions	2	1.6	2*	33.0	0	0	4	2.6
Abdominal and pelvic regions	1	0.8	0	0	0	0	1	0.6
Upper limbs	24	18.6	4**	67.0	7	36.9	35	22.7
Lower limbs	11	8.5	0	0	10	52.6	21	13.7

Localization of Injuries	Visceral Organ and/or Vessel Injuries							
	BFI		SFI		FRW		Total	
	n = 22	%	n = 94	%	n = 21	%	n = 137	%
Intracranial organ/vessels	15	68.2	8	8.5	4	19.0	27	19.7
Intrathoracic organ/vessels	3	13.6	39	41.5	3	14.3	45	32.8
Intraabdominal organ/vessels	3	13.6	34	36.2	9	42.9	46	33.6
The vessels of upper limbs	0	0	3	3.2	0	0	3	2.2
The vessels of lower limbs	1	4.6	10	10.6	5	23.8	16	11.7

BFI, blunt force injuries; FRW, firearm-related wounds; SFI, sharp force injuries.

*Rib cuts, **phalanx cuts.

SFI groups showed significant variations in the months of the years ($p < 0.001$), but the assaults in the FRW group did not show any variations ($p > 0.5$) (Fig. 1). Overall, the assaults peaked in October ($n = 57$; 11.7%) and July ($n = 56$; 11.5%).

In a study by Taylor et al., it was emphasized that most assaults occurred at night and weekends, especially just after Friday and Saturday midnight (18). Briscoe and Donnelly reported that assault incidents on licensed premises in Sydney mainly took place between midnight and 3 AM (31). Alcohol is associated with

interpersonal violence and assaults which occurs at midnight (18,31). In recent studies, the ratios of victims who endure several assaults and homicides were reported to be 23–75% (6,7,14,17,18,25). In the present study, the assaults tended to increase after midday and reached the peak between 9 PM and midnight and decreased to minimum values between 3 and 6 AM ($p < 0.001$ overall and for each group; Fig. 2). The difference can be explained by limited nightlife in the Manisa province and by a relatively lower rate of intoxicated victims (21.2%).

TABLE 6—Medico-legal evaluation of victims.

Medico-Legal Evaluation of Victims	BFI		SFI		FRW		Total	
	n = 262	%	n = 163	%	n = 63	%	n = 488	%
Victims may improve with simple medical treatments	151	57.6	98	60.1	37	58.7	286	58.6
Victims cannot improve with simple medical treatments	111	42.4	65	39.9	26	41.3	202	41.4
Victims exposed to a life-threatening act	20	7.6	63	38.7	14	22.2	97	19.9
Victims not exposed to a life-threatening act	242	92.4	100	61.3	49	87.8	391	80.1
Victims exposed to an act which causes a permanent disfigurement	15	5.7	20	12.3	1	1.6	36	7.4
Victims exposed to an act which causes functional weakness in one of his/her organs	4	1.5	7	4.3	2	3.2	13	2.7
Victims exposed to an act which causes loss of one of his/her organs	1	0.4	2	1.2	1	1.6	4	0.8

BFI, blunt force injuries; FRW, firearm-related wounds; SFI, sharp force injuries.

In the present study, the streets were the most frequent scenes for all types of assaults ($p < 0.001$ overall and for each group; Table 2). Taylor et al. (18) reported that most assaults occurred either within a residence or on a street, lane, or footpath. In another study, women were usually found to be victims of domestic violence, while men were found to be victims of street violence (14). Boström et al. (13) pointed out the role of sharp instruments in homicide events and emphasized the necessity of legislation against carrying knives in public places to prevent "street violence." If such legislations were made, most of the injuries in the SFI group (74.3%) in the present study could have been prevented.

In 70.5% of the cases ($n = 308$), assaults were committed by single offender (Table 3). This rate was reported to be 81% for violent events by Kompus (16) and 88.5% for homicides by Schmidt et al. (8). Most of the offenders were men in the present study ($n = 662$; 95.8%), which is comparable to the results of previous studies (7,8,31). It was striking that the age range of the offenders were 11–67 years (mean: 32.1 years) in this study. The youngest assailant was an 11-year-old student in a primary school who injured his schoolmate by a stone intentionally. It was ruled out that he did not have criminal liability and he was not arrested. Mean age of the offenders were reported to range from 29 to 33.5 years in previous studies (8,31).

The relationship between assaults and offenders' alcohol consumption is well established in homicides and sexual assaults (8,32–35). It was reported by Baltieri and de Andrade that alcohol consumption among sexual offenders at the time of assaults showed a great variability, ranging from 13 to 63% among rapists (33). In two studies from Finland, the ratios of homicide offenders who had alcohol at the time of crime were reported to be 69% and 78% (34,35). In the present study, this ratio (36.8%; $n = 254$) was lower than those reported before.

The relationship between victims and offenders has attracted scientific interest. However, studies conducted so far have yielded conflicting results about this relationship. The ratios of offenders not related to their victims were reported to vary between 0 and 34% (7,8,10,34,35). Schmidt et al. (8) reported that there was no relationship between assailants and victims prior to crime in almost 80% of the cases. In the present study, while 386 (55.9%) offenders were known by the victims before the events, 305 (44.1%) of them were strangers. The former group of offenders accounted for the majority among all cases and in each group ($p < 0.001$ for each group and overall; Fig. 3).

Kompus reported one to five injuries in 63%, six to nine injuries in 6%, and more than nine injuries in 31% of surviving assault victims (16). In the present study, there were a total of 1459 injuries in 488 victims with one to five injuries in 88.3%, six to nine injuries in 6.8%, and more than nine injuries in 4.9% of the cases (Fig. 4). Additionally, the average number of injuries per

victim was calculated in the present study. It was 3.0 in all cases combined, 3.6 in the BFI group, 2.5 in the SFI group, and 1.7 in the FRW group ($p > 0.5$). The average number of stab wounds on homicide victims was reported to be 19 (SD: 20.1, min = 1, max = 120 wounds) in a study by Hagelstam and Häkänen (34). Karlsson reported the ratio of a single injury to be 41.3% among homicides with sharp force (36). This ratio was found to be 50.3% among surviving victims in the present study.

Whereas the type of instrument used during assaults is related to some factors such as customs and legislations in a society, blunt objects are the most commonly used assault tools because they are part of our everyday life and easily available (10).

In most BFI, such as spouse abuse, child abuse, and interpersonal violence, offenders usually use their bare hands and feet to hit their victims rather than using any instruments (36). Most of the offenders (47.7%, $n = 453$) in the BFI group hit their victims by their fists and hitting with open hand or scratched them in the present study ($p < 0.001$). This rate was found to be 46.8% in a previous study (19).

Kitchen knives have been reported be one of the most frequently used sharp instruments in assaults and homicides (7,13,36). Rogde et al. (7) noted that they were used in 21% of male victims and 27% of female victims. Among other instruments used in sharp force violence are sheaths, stilettos, bayonets, broken glass, scissors, razor blades, axes and screwdrivers (7,36). In the present study, most of the injuries (84.7%; $n = 343$) in the SFI group were caused by several types of knives and penknives ($p < 0.001$). Broken bottles or glass, garden scissors, garden rake, falcata—a kind of machete with a one-edged blade that pitches forward toward the point, the edge being concave on the lower part, but convex on top (<http://en.wikipedia.org/wiki/Falcata>)—, razor blade, chopping knife, bayonet, and box cutter were the other instruments used. Hougen et al. (6) showed that 39% of the victims were shot with handguns, 26% with shotguns, 24% with rifles, and 3% with sub-machine guns. In this study, most frequently used assault tools in the FRW group were handguns (71.2%; $n = 74$; $p < 0.001$), followed by shotguns (26.9%; $n = 28$) and blank firing guns ($n = 2$) (Table 4).

Soft-tissue injuries comprised the majority of all injuries (80.1%) and in each group (84.1% in the BFI group; 75.3% in the SFI group; 61.5% in the FRW group; $p < 0.001$). There were bone fractures in 154 (10.5%) cases. While the majority of them ($n = 129$; 83.8%) was in the BFI group, the ratios of bone fractures were found to be 18.3% in the FRW group, 13.6% in the BFI group, and 1.5% in the SFI group ($p < 0.001$). One hundred and thirty-seven cases (9.4%) had visceral organ and/or vessel injuries. Most of these injuries were in the FRW and the SFI groups (32.8% and 30.8%, respectively). The ratio of visceral organ and/or vessel injuries in the BFI group was 11.7% (Table 5).

Seifert et al. (17) showed a relationship between localizations of BFI and causes of violence. They reported that the face and cranium were the most commonly affected regions by blunt traumas. Facial traumas were mostly seen in partner violence and interpersonal violence, whereas cranial traumas in interpersonal violence, especially stranger-perpetrated physical assaults, traumas to the neck and upper limbs in intimate partner violence, especially sexual assault or abuse, and traumas to the back in intimate partner violence (17). In a study by Brink et al., the most common sites of injury were the head, neck, or face, comprising 69% of all injuries, and there were nasal fractures in 29% of 195 cases with facial injuries (19). In the present study, most of the injuries (60.9%) in the BFI group were located in the face, head, and neck regions ($p < 0.001$) (Table 5). Similarly, most of the fractures (70.5%) in the BFI group were located in the face, head, and neck regions ($p < 0.001$) (Table 6). Furthermore, 55.1% ($n = 71$) of all fractures in the BFI group involved the nasal bone ($p < 0.001$); and there were nasal fractures in 12.3% of the cases of facial injury.

Previous studies on homicides revealed that the thorax was the most affected region by SFI (7,11,13,24,25). However, face and upper extremities were shown to be most commonly injured regions in nonfatal cases (11,22). Moreover, another study from Turkey reported that the most commonly injured regions were the upper and lower extremities, while the most commonly injured cavity was thorax (37). In the present study, face, head, and neck regions (22.7%; $n = 92$) and thoracic regions (22.5%; $n = 91$) were the most commonly affected regions in the SFI group ($p > 0.5$) (Table 5). However, the most commonly affected visceral organs and/or vessels were intrathoracic organs and/or vessels (41.5%) in the SFI group (Table 5).

While the head was known to be the region most often hit, followed by the chest in firearm-related homicides (6,26,38), the lower limbs were found to be the primarily affected region ($n = 64$; 61.5%) and the ratio of wounds in the face, head and neck regions was rather low (9.6%; $n = 10$) in the FRW group in this study ($p < 0.001$) (Table 5). The high ratio of firearm wounds in the lower limbs can be explained by a mafia style, which is referred to as "shooting the heels" in Turkey. "Shooting the heels" is an act of violence often committed by mafia wannabes to warn, threaten, or intimidate. In the FRW group, upper limb fractures were present in 52.6% of the cases ($p < 0.001$). The majority of visceral organ and/or vessel injuries (33.6%) in the FRW group were located in the abdomen ($p > 0.05$) (Table 5).

A comparison of the ratios of injuries treated with simple medical treatment showed no significant differences between the groups ($p > 0.05$; Table 6). The most frequent life-threatening acts were found to occur in the SFI group (38.7%) followed by the FRW (22.2%) and the BFI groups (7.6%) ($p < 0.001$). The ratios of permanent disfigurement and functional weakness in an organ were highest in the SFI group (12.3% and 4.3%; $p < 0.001$ and $p > 0.05$, respectively), and the ratio of organ losses was highest in the FRW group (3.2%; $p > 0.05$). This, once again, confirmed that SFI are the most dangerous and more frequent cause of permanent scars on the bodies of victims (37).

Conclusion

In this study, it seemed that a nonsexual assault is currently an important problem for human health as well as sexual assault and there were some differences and similarities between blunt force violence, sharp force violence, and firearm-related violence. Most prominent differences were seen in the monthly distribution of

assaults, localization and severity of the injuries when injuries were classified according to the type of assault.

Although the actual solution of this problem on the basis of crime prevention includes educational, sociocultural, and economic efforts; the results of this study will contribute to researchers investigating the characteristics of the victims, offenders, and injuries and types of assaults because of nonsexual violence in efforts of prevention of nonsexual assaults. In terms of preventive measures, cruising of the law-enforcement officers and introduction of neighborhood watch schemes in the regions where and when nonsexual violence frequently occurs, restricting the bearing of firearms and knives and, depending on the localization and severity of the wound and the type of injury, implementation of tougher sanctions or sentences for the assailants would be helpful in tackling nonsexual violence.

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