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Analysis of Homicidal Deaths in Menoufiya Governorate, Egypt from 2006 to 2010

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Abstract Homicide is a reflection of extreme aggression and examined at medicolegal centres to determine the cause and the manner of death. This study was done on autopsies conducted at Menoufiya Governorate Medicolegal Centre during 5-years period from 2006-2010 to know the pattern of homicide and to determine how autopsy information influences the outcome of police inquest. Information was obtained from all medicolegal reports of homicidal deaths and statistically analyzed. The total number of postmortem examinations was 3215; of these 6.9% homicide autopsies were performed over the study period; it showed progressive increase in number through the period of the study. The homicide rate was 0.0069 per 100,000 populations. The majority (64%) of victims were in the 21-50 years age groups, farmers (26.1%) and males (69.4%). Most (46.4%) incidences occurred during summer, among family members (45%) followed by friends and neighbors, took place outdoor (62%) and 56.3% of homicides occurred in rural areas. The majority of homicide deaths were caused by Sharp instruments (41%), blunt instruments (28.4%), followed by firearm weapons (14.9%). Causes of death were head injury (36.6%) and occurred among males, while burn was more common among females and asphyxia were equally distributed. Committing homicides by related offenders in places not related to the victims and detecting that by autopsy were findings of most important. The cases have been labeled as homicide on the basis of autopsy which confirmed police inquest, thus autopsy should be done in all cases suspected to be homicide by police.

Keywords Homicide, analysis, Egypt

Introduction

Homicide is defined as killing of one human being by another human being and is one of the leading causes of unnatural deaths. The various patterns of homicidal deaths include assault by sharp weapon, blunt weapon, firearms, strangulation, homicidal hanging, smothering, drowning, burns, poisoning, omission another etc. the term applies to all such killings whether criminal or not. The incidence of homicide is increasing worldwide and the pattern is also changing because of population explosion, changing life style, modern needs of the man and easy availability of various types of weapons (Koehler and Brown, 2010 and Hugar et al, 2012).

There has been a global increase in homicide, it causes over than 500,000 deaths per year worldwide (UNODC, 2011). The precipitating causes for homicidal crimes are immemorial revenge, family feuds, anger, jealousy and other personal motives (Chattopadhyay and Sukul, 2013).

Homicide is a common endpoint of many different behavioral pathways. It may be a result of arguments between acquaintances, domestic violence, robberies, drug addiction and terrorism (Hassan et al., 2005).

The patterns of homicide are useful indicators of the social stresses in a community (Nadanovsky and Cunha-Cruz, 2009). Study of the homicidal pattern in a

society is one of the first steps in developing strategies to prevent it (Murad et al., 2006). Homicidal patterns can also provide valuable baseline information for other comparative studies as well as for monitoring of socio-pathological trends in the studied community (Bhupinder et al., 2010). Medicolegal autopsies not only give the cause and manner of death but also give important statistical data related to legal incidents in the cities and regions where the autopsies are conducted (Ahmet et al, 2005).

Menoufiya is an Egyptian Governorate situated at the middle of Nile Delta with a population of 3,657,000 (CAPMAS, 2012). In Menoufiya Governorate, agriculture is generally the main activity of the population due to its fertile agricultural land. To our knowledge there is under estimation of homicidal patterns in Egypt. Multi-centre studies are necessary to get a nation-wide idea about homicidal deaths. Therefore, this study was undertaken to determine the pattern of homicidal deaths on which medicolegal autopsies were conducted in Menoufiya departments of Forensic Medicine – Ministry of Justice, Egypt for the years 2006 through 2010 and to evaluate the role of autopsy in confirming police inquest.

Material and methods

This retrospective statistical study was carried out on autopsies conducted at Menoufiya departments of Forensic Medicine, Ministry of Justice, Egypt during 5-years period from the beginning of January 2006 to the end of December 2010. The study was authorized and approved by Benha research ethics committee, faculty of medicine, Benha University and further approval were obtained from Menoufiya departments of Forensic Medicine.

All autopsy reports that listed homicide as a manner of death were used as a source of data with protection of the anonymity of victims. Demographic data included victim's age, gender, residence and occupation, season of occurrence homicide and homicide offender. Autopsy data included scene of homicide, medical intervention, part of the body involved, defense wounds, toxicological analysis results, cause of death, type of weapon used, autopsy findings and results.

The collected data were tabulated and analyzed using SPSS version 16 software package (SPSS Inc, Chicago, ILL Company). Data were presented as number and percentages. Chi square test (X^2) of significance was used. The accepted level of significance in this study was stated at 0.05 ($P < 0.05$ was considered significant).

Results

Demographic results

Homicidal deaths represented 222 (6.9%) from a total of recorded 3215 medicolegal cases examined in Menoufiya forensic medicine department over the period of the study. The highest incidence rate of homicidal deaths was in the years 2009-2010, as shown in Figure (1).

The total incidence rate of homicidal deaths per 100,000 populations was (0.0069). Most of homicidal deaths (27%) were in the age group 31-40, and the incidence of homicidal deaths declines towards both extremes of age, as illustrated in Figure (2).

The majority of homicidal deaths were males (69.4%), while females represent 30.6%,; female to male ratio is 1 : 2.3. The majority came from rural areas (56.3%), as highlighted in Fig. (3).

The majority of homicidal crimes occurred during summer months (46.4%) and the lowest during autumn, as shown in Fig. (4).

The highest incidence rate of homicide deaths was among farmers (26.1%), these findings were statistically highly significant ($p<0.001$), as shown in Table (1).

In the majority of homicides, victims were related to their offenders; (family members, friends and neighbors), with the highest incidence of crimes occurred among family members 45%, as shown in Fig. (5).

Autopsy results

As regard scene of homicide**,** the majority of homicide crimes took place outdoor (62.2%), indoor in 37.3%, while in hospital 0.5%.

The most common used weapon of homicide was sharp weapon (41%), followed by blunt (28.4%) and firearm (14.9%) weapons, as illustrated in Fig. (6).

Autopsy revealed that head injury was the most common cause of death (36.6%); 20% of cases suspected by police as not as homicide was confirmed by autopsy as a homicide. These findings were statistically highly significant ($p<0.001$), as shown in Table (2).

Homicides by stab injuries, head injuries, firearm injuries, cut throat, and poisoning were more common among males, meanwhile homicides due to medical malpractice, burn and act of omission (infanticide) were more common among females; but homicides by asphyxia were equally distributed between males and females.

Toxicological analysis was done for all cases and found to be negative in 97.3%. Defense wounds were noted in 25.7%.

The head was the most common site of injury (45.5%), these results were found to be statistically highly significant ($P<0.001$), as showed in Table (3).

Table (1): Distribution of homicidal deaths victims according to their occupation

Occupation	No.	%
Employees	50	22.5%
Workers	31	14%
Students	5	2.3%
Housewives	40	18%
Farmers	58	26.1%
Others	12	5.4%
Unemployed	26	11.7%
Total	222	100%

X^2=51.4; P<0.001

Table (2): Distribution of homicidal deaths according to the pattern of homicide

Pattern of homicide	No.	%
Stab injury	54	24.3%
Head injury	81	36.4%
Firearm wound	33	14.9%
Cut throat	19	8.6%
Asphyxia	20	9%
Poisoning	4	1.8%
Others*	11	5%
Total	222	100%

*X^2=63.7; P<0.001; *Others = burn, act of omission (infanticide), malpractice*

Table (3): Distribution of homicidal deaths according to the site of injury

Site of injury	No.	%
Chest	40	18%
Head	101	45.5%
Neck	34	15.3%
Abdomen	5	2.3%
Axilla	0	0%
Thigh	4	1.8%
Back	4	1.8%
Multiple	34	15.3%
Total	222	100%

X^2= 65.7, P<0.001

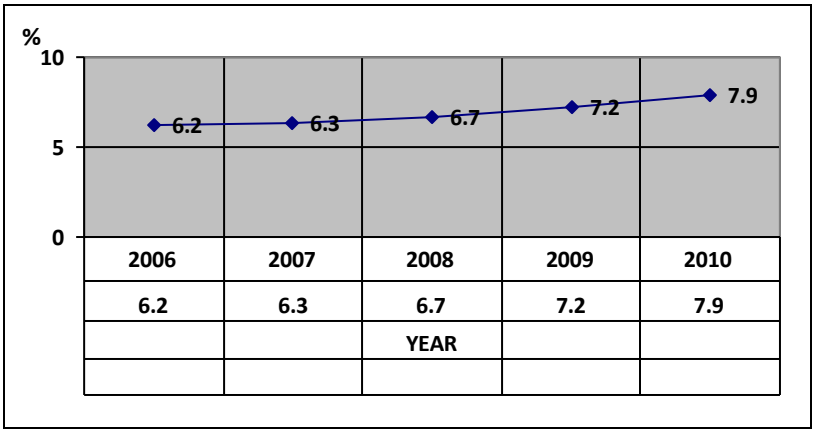

Figure (1): The incidence rates of homicidal deaths over the period from 2006 to 2010.

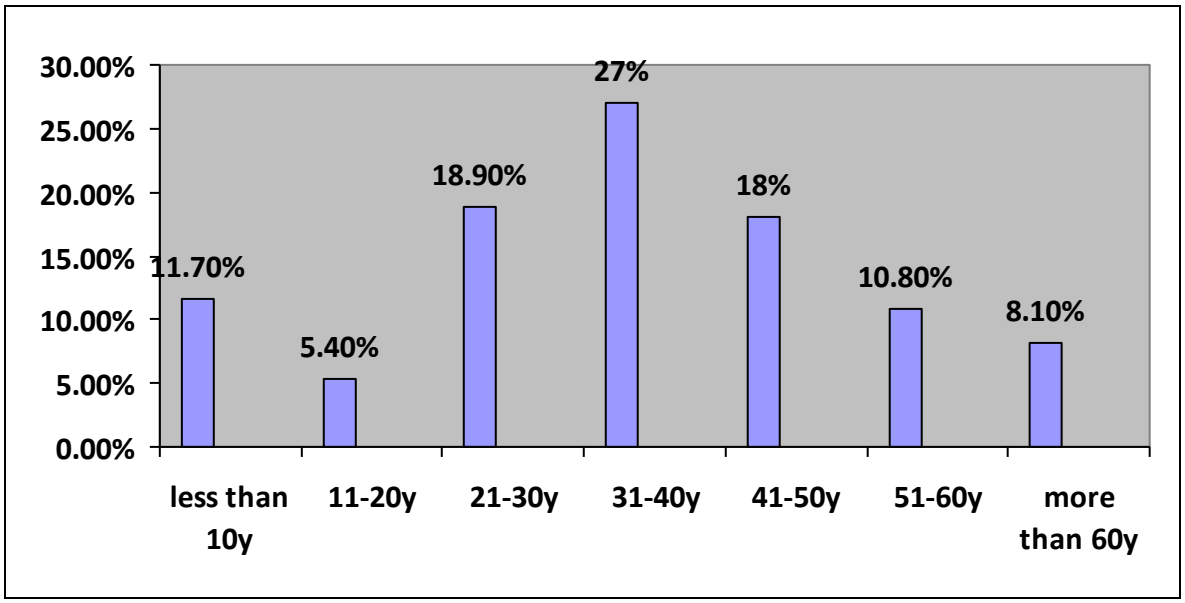

Figure (2): The age distribution of the homicidal deaths.

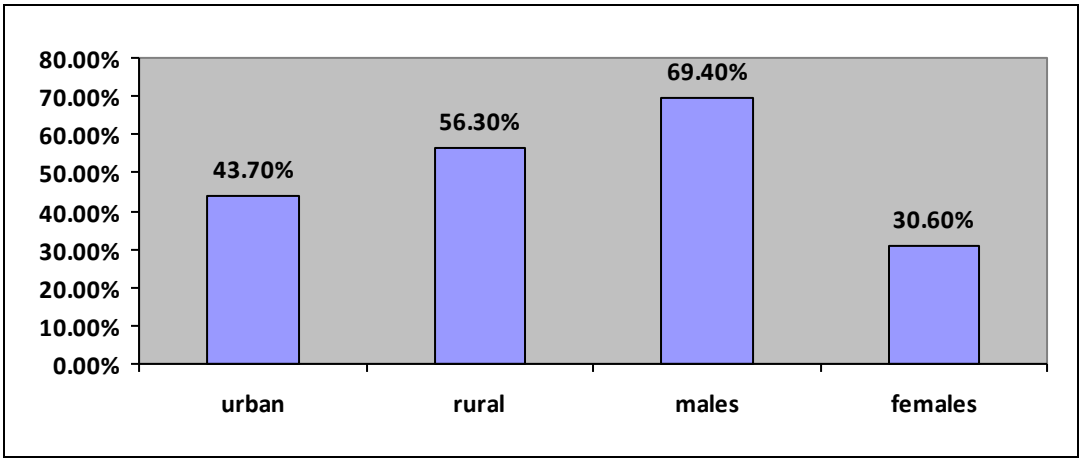

Figure (3): The distribution of homicidal deaths according to gender and residence.

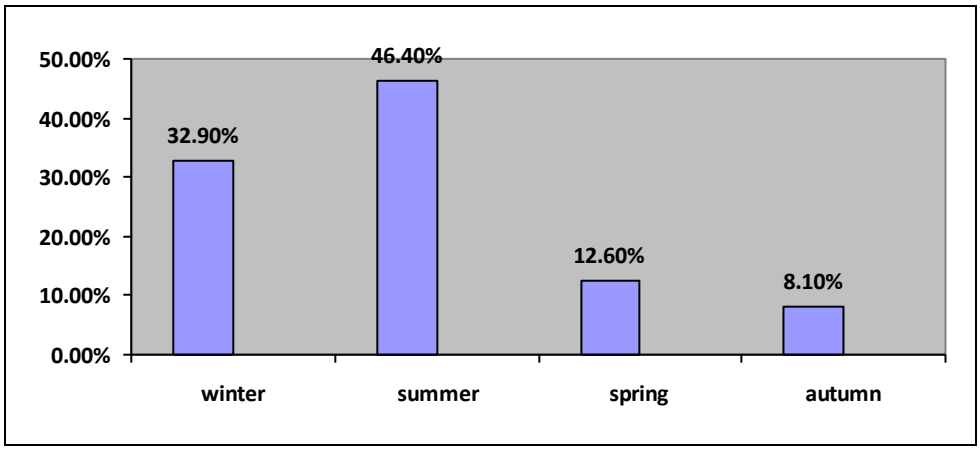

Figure (4): The seasonal variation of homicidal deaths incidence.

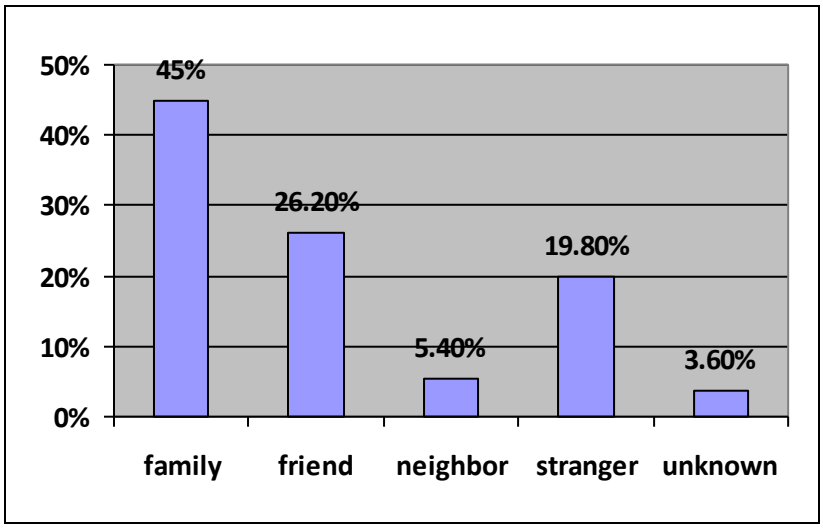

Figure (5): The distribution of homicidal deaths according to their offenders.

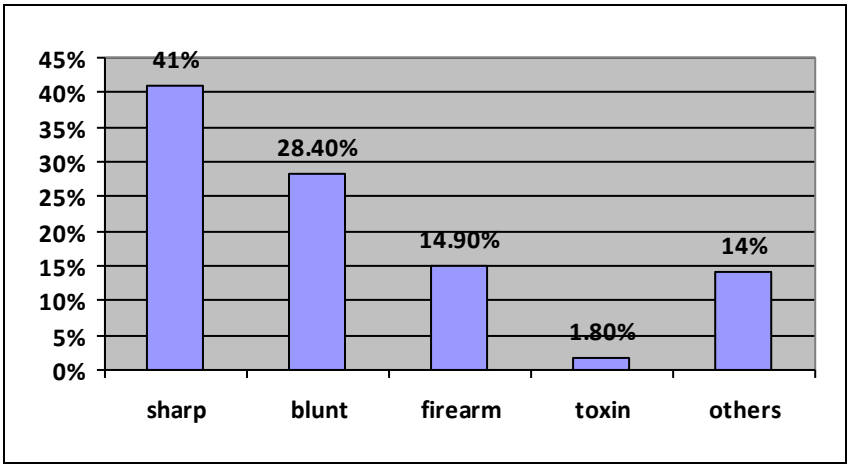

Figure (6): The distribution of the homicidal deaths according to type of weapon (Others = asphyxia by a ligature, burn by fire, malpractice due to anesthesia and act of omission (infanticide).

Discussion

The pattern of homicides varies from country to country and is influenced by many factors; social, moral, political and cultural influences. The rising trend of homicide rate were attributed to increasing population, industrialization, easy availability of weapons, changing life styles and stressful living conditions (Kumar et al., 2005 and Vij et al., 2010).

In the present study homicidal deaths represented 6.9% from the total recorded medicolegal cases examined in Menoufiya Forensic Medicine department over a five-year period from year 200 to 2010. The incidence rate of homicidal deaths in the Governorate was progressively increased over the years of study with the maximum rate occurring in year 2010.

Elgendy et al., (2008) reported that homicidal deaths accounted for 50.9% of unnatural deaths occurred in four districts in Cairo during 5-years period from 1996 to 2000. This rising rate may be attributed to increasing population and life style in Cairo than Menoufiya.

In South India, Vij et al. (2010) found an increasing rate in homicidal deaths during a five-year retrospective study between 2001 and 2005. Meanwhile, in Kuala Lumpur Kumar et al. (2005) and in South Australia Temlett and Byard (2012) found that the number of homicidal deaths was fairly constant or declined markedly. Chattopadhyay and Sukul (2013) stated that rapid increase in population, urbanization and industrialization has led to an increase in the incidence of homicide.

The total incidence rate of homicidal deaths per 100,000 populations in Menoufiya was 0.0069, which considered to be lower than the global rates. In Dammam, Saudi Arabia the average annual homicide rate reported by Madadin et al. (2011) was 1.49 per 100,000 people, and in Pakistan the rate was 4.22/100,000 (Hassan et al., 2005). Saint-Martin et al., (2006) found that the average homicide rate was 1.55 per 100,000 persons in the West of France.

The peak age of homicide in this study was in the 3rd and 4th decades, as most of homicidal deaths were in the age group (21-50ys, 64%) and the incidence declines towards both extremes of age, where 18.9% of cases occurred in the age group above 50 years. At Dakahlia locality, the incidence of unnatural deaths in elderly persons aged 50 years or more over a period of 10 years from 1996 to 2005 was 22.95% (Ali et al., 2007). In agreement with this study, Elgendy et al., (2008) found that homicide in greater Cairo was most common in fourth decade (42.3%) followed by third decade (19.3%). Also, in Assiut Governorate Abdel-Hady et al. (2008) reported that the highest incidence of firearm injuries and fatalities occurred in the age group 21–30 years (31.3%), followed by the age group 31–40 years (25.5%).

Mohanty et al. (2007) found that almost two-thirds (66.6%) of the homicidal victims were in the age group 21–40 years. Gupta et al. (2004) in their study of homicidal death found that most of the victims belonged to the third decade of their life (21–30 years) as this age group is the most exposed to violent trauma by the nature of its life style.

Men are more commonly victims of homicide, perhaps as they are generally working outdoors and are more exposed to stress, frustrations, physical confrontation and violence. Nevertheless women often become victims of domestic homicides due to physical disadvantage and incapability of resistance to violence (Kumar et al., 2005). The present work confirmed the prevalence of the male victims (69.4%). In Sri Lanka it was 69.4% (Edirisinghe and Kitulwatte (2009), in London 66% (Henderson et al., 2005), in Turkey 83% (Hilal et al., 2005), and in Bangladesh 75% (Islam and Islam, 2003).

Most of homicidal victims in Menoufiya governorate came from rural areas (56.3%), occurred among farmers (26.1%) during summer season (46.4%) and outdoor (62.2%). This may be due to the agricultural pattern of this governorate. These results are in agreement with Madadin et al. (2011) who found that the highest number of homicides was in summer months (52%). Vougiouklakis and Tsiligianni (2006) confirmed that most homicides took place outside in a disserted area or close to agricultural side (41.3%). Kumar et al. (2005) found that most of homicidal victims were laborers and workers (71.9%).

The majority of homicidal victims in this study were related to their offenders in some way (family members, friends or neighbors), with the highest incidence of crimes occurred among family members (45%), which attributed to argument on farms inheritance. These results are in accordance with Saint-Martin et al. (2006) who found that 52% of the homicidal victims knew their assailant and majority of them were family members.

The method of killing depends on the availability of weapons. Weapons of homicide differ from nation to nation, in the United States firearms are the most common. This is in contrast with the South Asian and Middle East countries where the most preferred choices are blunt and sharp weapons (Kumar et al., 2005 and Vij et al., 2010).

In the present work autopsy confirmed that the most common used weapon of homicide was sharp weapon (41%), followed by blunt and firearm weapons; thus this may indicate increasing trends of using firearms for homicides in Egypt. In greater Cairo, Elgendy et al., (2008) reported that, sharp force was the most common cause of death (23.8%), then blunt force (19.3%), firearms (18.9%), poisonings (18.8%), asphyxiation (12.6%) and burns (5.6%).

Hagras and Kharoshah (2012) stated that the high incidence of homicidal deaths by fire arms in Suez Canal Area cities may be due to the significant use of unlicensed fire arms, which are usually smuggled to commit terrorist acts. This situation occurs in places where weapons are readily available or state legislation allows people to hold fire arms.

This was in agreement with Temlett and Byard (2012) who confirmed that the most common weapons of homicide in Australia involve sharp force trauma (47%), blunt force trauma (31%) and firearms (10%). Bashir et al. (2005) in their study of homicides in Pakistan confirmed that the percentage of firearm homicides was between 60% and 90% of all homicides. On the other hand Madadin et al. (2011) showed that blunt trauma homicidal deaths were the most common (35.2%), followed by sharp weapons (34.4%).

Various studies have stated that stabbing, blunt-force trauma especially blunt head injury, shooting, and asphyxia are the four commonly used methods of homicide (Saint-Martin et al., 2006). The present study confirmed that the most common method of homicidal deaths was head injury (36.6%). Vij et al. (2010) in their study of homicides in South India found that fatal head injuries were the commonest cause of death (39.3%).

The present study showed that homicides by stab injuries, head injuries, firearm injuries, cut throat, and poisoning were more common among males, meanwhile homicides due to medical malpractice, burn and infanticide were more common among females, but homicides by asphyxia were equally distributed between male and female cases. Vij et al. (2010) found that homicidal deaths due to sharp, blunt and firearms injuries were more common among males, meanwhile strangulation, burn and infanticides were predominated among females. Also, Gamal Eldin et al. (2008) reported that fatal firearm wounds were more common among males (92.9%) in El-Fayoum governorate.

Defense wounds reflect anticipation of injury and an attempt to ward off the harm. Absence of defense wound does not exclude homicide since the victim might be incapable of effective defense for reason such as element of surprise or unconsciousness (Mohanty et al., 2007, Hugar et al., 2012). The low percentage of defense wounds noted in the present study (25.7%) may be due to loss of consciousness in cases of head trauma and firearm

injuries. These results were in agreement with Singh & Gupta (2007) who found that defense injuries were noted in a low percentage of homicidal victims (29.12%), also, Mittal et al. (2007) reported the incidence to be 36%. On the other hand Chattopadhyay and Sukul (2013) confirmed that defense wounds were noted in 48% of the homicidal victims. Also, Mohanty et al. (2007) reported defense wounds in 46% of the homicidal victims.

The majority of homicidal victims died at the crime scene in this study with no medical intervention (84.7%). This was in accordance with Madadin et al. (2011) who found that only 31% of the cases were hospitalized for medical intervention before dying.

Regarding relation between manner and scene of death in this study, it was found that homicidal deaths occurred more outdoor (62.2%), this is in agreement with Elgendy et al., (2008) who reported that outdoor was the most common (59%).

In the present study post mortem toxicological analysis was negative among the vast majority of homicidal victims (97.3%). Madadin et al. (2011) found that post mortem toxicological analysis was positive in only 13.1% for alcohol, amphetamine, and opiates and the majority of homicidal victims (86.9%) showed negative toxicological results. Thus it is important to study poisoning related homicidal deaths as homicide has not traditionally featured prominently in fatal poisoning statistics.

As regard comparing autopsy results and police inquest in this study, autopsy findings revealed that 20% of cases confirmed to be homicide in cases suspected by police having chest and head trauma.

It is concluded that the majority of homicidal victims were males farmers, aged from 21 to 50 years, commonly related to their offenders, caused by sharp and blunt weapons, occurred during summer months, and outdoor in rural areas. The most common cause of death was head injury. Information gained from autopsy is a vital part of the study as it influenced the outcome of litigation. Thus the study recommend that autopsy findings may appear to be neutral or favorable to either the plaintiff or the defendant, and are typically the crux of a successful legal argument for either side in a homicide action.

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الملخص العربي

تحليل للوفيات الجنائية في محافظة المنوفية مصر من 2006إلى 2010

إبراهيم صادق الجندي و نيرمين عدلي محمود حسن[1]

يتم فحص الحالات الجنائية التي تعكس العنف الزائد في المراكز الطبية الشرعية لتحديد سبب وطريقة الوفاة. وقد أجريت هذه الدراسة علي الحالات التي تم تشريحها في مركز الطب الشرعي بمحافظة المنوفية خلال فترة 5 سنوات من 2006 حتى 2010, وذلك للتعرف علي نمط الحالات الجنائية بالمحافظة وتحديد دور وتأثير المعلومات الناتجة عن التشريح في نتائج استجواب الشرطة.

تم جمع البيانات والمعلومات من كل التقارير الطبية الشرعية للوفيات الجنائية وتحليلها إحصائيا. كان العدد الكلي للوفيات التي تم فحصها بمركز الطب الشرعي بمحافظة المنوفية 3215, منهم 6.9% حالات جنائية تم تشريحها, وأظهرت النتائج زيادة متدرجة في عدد الحالات خلال فترة 5 سنوات. كانت نسبة الحالات الجنائية 0.0069 لكل 100,000 من السكان بالمحافظة. وكانت الغالبية العظمي 64% من الضحايا في سن 21 50 سنة, وبين المزارعين بنسبة 26.1%, ومن الذكور بنسبة 69.4%. ومعظم الحدوث (46.4%) تم خلال الصيف وبين أفراد من العائلة بنسبة 45%, يليه الأصدقاء والجيران, وفي مكان خارج المنزل بنسبة 62%, وفي المناطق الريفية بنسبة 56.3%. وكانت الأداة المستخدمة في الغالبية العظمي هي الأدوات الحادة بنسبة 41%, ثم الأدوات الراضة بنسبة 28.4%, يليها الأسلحة النارية بنسبة 14.9%. وكان سبب الوفاة إصابات الرأس في 36.6% بين الذكور, بينما الوفاة من الحروق كانت شائعة بين الإناث, أما الوفاة من الاختناق فكان بين الذكور والإناث بنسب متقاربة.

والخلاصة أن ارتكاب الوفيات الجنائية بواسطة جناة ذو قرابة أسرية في أماكن لا تنتمي للضحية واكتشاف ذلك من خلال معلومات ونتائج التشريح كان أهم نتائج التحقيق القضائي, حيث تم تمييز الحالات علي أنها جنائية بناء علي التشريح والذي أكد استجواب البوليس, لذا نوصي بضرورة إجراء التشريح الكامل في كل الحالات المشتبه في جنايتها من قبل الشرطة.

1 قسم الطب الشرعي والسموم الإكلينيكية كلية الطب جامعة بنها