

An Analysis of Medico-Legal Autopsies Alleged to be Homicide: A Study from the Northern Province of Sri Lanka

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Abstract

Introduction: Homicide, killing one person by another, is considered the most devastating violence. Legally homicide can be either murder or culpable homicide, where the difference lies in the degree of knowledge and intention. This study describes the demographic features and medico-legal significance of the injury and evaluates the social background of the victims of homicide.

Methods: A retrospective descriptive study based on a post-mortem report was carried out on all the cases examined at the JMO office, Jaffna, from June 2014 to June 2022. The data were analyzed using SPSS statistical package.

Results: Among 105 post-mortem examinations alleged to be homicides, 77% (n=81) of deaths were recorded in the Jaffna district, while 23% (n=24) were recorded outside the Jaffna district. There was a male predominance 63% (n=66) with a male-to-female ratio of 7:4. The commonest weapon or force used in homicide was blunt 51% (n=54), while sharp was the second highest (32%, n=34). Cut and laceration were the nature of injury for 26% (n=27) and 22% (n=23) of homicides, respectively. Consequences of craniocerebral injury (32%, n=34) were the major cause of death, while head and neck regions were commonly involved in 38% (n=40) and 25% (N=26), respectively. Regarding the nature of the injury, burn injuries (90%, n=10), mechanical airway obstruction (78%, n=07), and lack of breathable air (100%, n=05) showed female preponderance (p value<0.05). In contrast, cut injury (61%, n=17), laceration (78%, n=19), stab injury (100%, n=05), and firearm injury (100%, n=04) were predominantly seen in the male population. Considering the cause of death, consequences of cranial-cerebral injury (79%, n=25) were commonly seen in the male gender (p<0.05), and asphyxia-related deaths (85%, n=12) were more in the female gender (p<0.05).

Conclusion: The nature of the injury and the cause of death in homicides had a significant relationship with the gender of victims.

Keywords: Homicide, cause of death, post-mortem, nature of injury, craniocerebral injury, asphyxia

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Introduction

Homicide, killing one person by another, is considered the most devastating violence. Legally homicide can be either murder or culpable homicide, where the difference lies in the degree of knowledge and intention. The difference between them was clearly stated in Sri Lankan penal code s.293 and s.294.[1] (citations should be behind the full stop

without space. Apply to the whole document) If a person causes a bodily injury that is likely to cause death or with the knowledge that he is likely to cause death, he commits culpable homicide. This becomes murder if the act is done with the intention of causing death.[1] The forensic expert's opinion is often indispensable in determining the penalties. According to a global study on homicides by

UNODC (United Nations Office on Drugs and Crime), an average global homicide rate of 6.1 victims per 100,000 population was estimated in 2017.[2] The World report on violence and health stated that violence is among the leading causes of death worldwide for people aged 15–44. Nevertheless, the prevalence and rate of homicide vary from country to country and region to region.[3] The general objective was to describe the demographic features and medico-legal significance of the injury and to evaluate the social background of the victims of homicide. The specific objectives were to describe the association between gender and the nature of the injury, to explain the association between gender and the cause of death, and to describe the association between gender and weapons used for killing.

The present study was carried out, especially in the Northern province of Sri Lanka, to get a better perspective of the situation. The purpose of this article is to raise awareness about the problem of homicide among the public and to make the case that homicide is preventable, and that public health has a crucial role to play in addressing its causes and consequences.

Methodology

A retrospective descriptive study based on victims of homicide was carried out on all the cases reported in post-mortem reports examined at the JMO office, Jaffna, from June 2014 to June 2022. The study sample was convenient sampling. Data were collected from the post-mortem reports and relevant documents.

The extracted data were analyzed using SPSS statistical package version 21. Mean, standard deviation, percentage and proportions were used to summarize the data. Pearson’s Chi-squared test and fisher’s exact test were used to test for significance, and a p-value <0.05 was considered statistically significant.

Results

During the period of June 2014 to June 2022, there were 105 post-mortem examinations alleged to be a homicide have performed. Ninety-eight percent (n=103) were noted as Sri Lankan Tamil, while 2% (n=2) were reported as Sinhala. Most victims were young adults, i.e., between 20 and 40 years of age. The mean age for homicidal deaths was 40 years, while the median was 37 years.

There was a male predominance (63%, n=66) with a male-to-female ratio of 07:04. Among 105 post-mortem examinations of homicidal cases, 77%

(n=81) of deaths were recorded in the Jaffna district, while the remaining 23% (n=24) of post-mortem examinations conducted were referrals from other districts of the Northern Province. Jaffna police area and Chavakachcheri police area were commonly involved in the Jaffna district.

Sixty-eight percent (n=71) of deaths occurred between 12:00 to 00:00.

The commonest weapon or force used in homicide was blunt (51%, n=54), while sharp was the second highest (32%, n=34). Fire accounts for 10% (n=10), while firearm and poisoning account for 4% (n=04) and 3% (n=03), respectively.

But the association between gender and weapons used for assault had no statistical significance. The head was the most frequent site (38%, n=40), followed by the neck (24%, n=25). Multiple wounding was seen in wide distribution, accounting for 17% (n=18). The distribution of injuries over the body is shown in Figure 1.

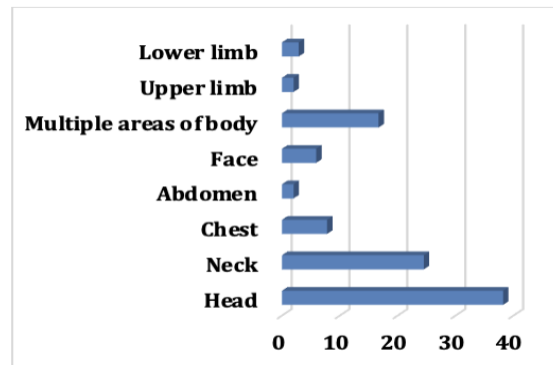


Figure 1: Distribution of injuries over the body

Cut and laceration were the nature of injury for 27% (n=28) and 23% (n=24) of homicides, respectively. The nature of the injuries is shown in Figure 2.

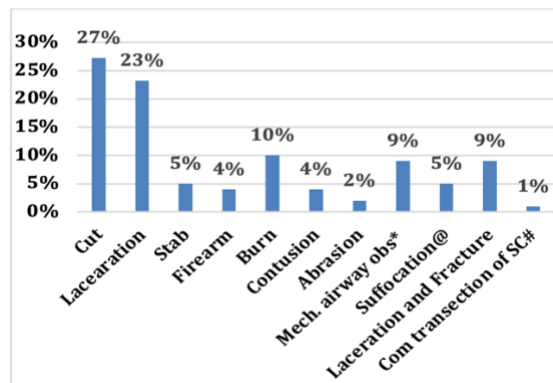


Figure 2: Nature of injuries (*=Mechanical Airway obstruction, @=Suffocation (Lack of breathable air), #=Complete Transection of the Spinal code)

Regarding the nature of the injury, burn injuries (n=10, 90%), mechanical airway obstruction (n=7,78%), and lack of breathable air (Suffocation) (100%, n=05) showed female preponderance (p-value <0.05) (Table 1). In contrast, cut injury (n=17, 61%), laceration (n=19, 78%), stab injury (n=5,100%), and firearm injury (n=04,100%) were predominantly seen in the male population though they were not statistically significant (p-value>0.05). Associations between gender and the nature of injuries are shown in Table 1.

Table 1: Associations between gender and nature of injuries.

Nature of Injury	Female N=39 n (%)	Male N=66 n (%)	P Value
M. Airway O*	07 (78)	02 (22)	0.012
Suffocation	05 (100)	00 (00)	0.004
Burn	10 (90)	01 (10)	0.000
Cut injury	11 (39)	17 (61)	0.992
Laceration	05 (22)	19 (78)	0.061
Stab injury	00 (00)	05 (100)	0.070
Firearm inj.	00 (00)	04 (100)	0.107

*Mechanical Airway Obstruction

Consequences of craniocerebral injury (33%, N=32) were the major cause of death. Hemorrhagic shock (30%, n=30) was the second highest. Asphyxia-related fatalities and consequences of burn injuries account for 13% (n=14) and 10% (n=10), respectively. The cause of death of the decedents is shown in Figure: 3.

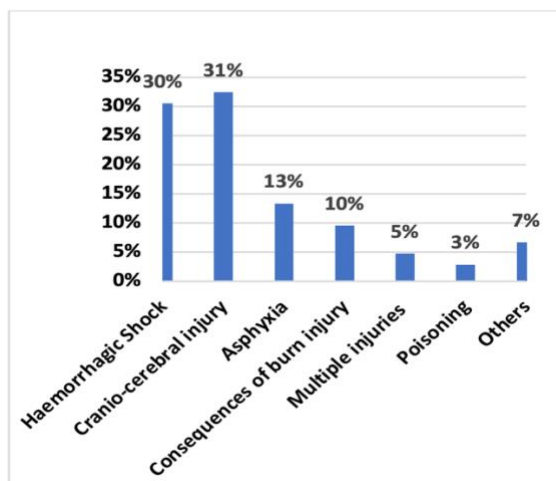


Figure 3: Cause of death of the decedents.

Considering the cause of death, consequences of cranial-cerebral injury (79%, n=25) were commonly

seen in the male gender (p<0.05) and asphyxia-related deaths (85%, n=12) were more in the female gender(p<0.05). The correlations between gender and cause of death are shown in Table: 2.

Table 2: Correlation between gender and cause of death

Cause of death	Female N=39 n (%)	Male N= 66 n (%)	p-value
CCI*	07 (21)	25 (79)	0.015
Asphyxia	12 (85)	02 (15)	0.000

*Cranio- cerebral injuries

Since it is a retrospective study, there were some limitations as we could not get the exact information regarding the social background of the victims, such as occupation and drug history. Out of 105 homicidal cases, two maternal deaths and two rape and murder cases were noted. Only 17% (n=18) of subjects revealed that victims lived alone. 66% (n=69) of death occurred before hospital admission.

Discussion

According to a global study on homicides by UNODC (United Nations Office on Drugs and Crime), an average global homicide rate of 6.1 victims per 100,000 population was estimated in 2017. More homicidal deaths were estimated to have occurred in America and Africa, followed by Asia.[2] The current population of Sri Lanka, one of the Asian countries, is around 21 million (21,616,684) based on Worldometer elaboration of the latest United Nations data.[4] According to the current statistics, the total population of the Northern Province is 1.246 million, where 49% of the population lives in the Jaffna district, with the highest population density in the Northern Province.[5] Further, 84.5% of the population lives in rural areas, and only 15.5% is in urban areas. The recent data on Sri Lanka’s crime rate & statistics related to the homicidal rate for 2019 was 3.48 per 100k population, a 43.72% increase from 2018.[3] The Jaffna district of the northern province must be analyzed to see the reasons behind the high rate of homicides in certain police areas like the Chavakachcheri police area.

Globally, males lead homicide trends both as victims and perpetrators, and homicide affects men aged 15-29 the most, while female victims are more evenly distributed across all age groups.[5] In our study, most of those murdered were aged between 20-40, suggesting that most of the homicides occurred among the young population, and males were predominantly represented. Our study findings were

consistent with other authors' observations.[6,7] But a study done in Japan showed that aged more than 70 were victimized more.[8] Most homicides (68%) were reported from afternoon to midnight, as it could be when most people return home from work. They may well be under the influence of alcohol as well. In keeping with the homicidal trends of our study, the previous records of Sri Lanka, developed countries like the USA and Japan, developing cities like Delhi, and underdeveloped countries also showed that male homicides were more common, and the age distribution of victims also followed a similar pattern. [8-12]

The earlier study, which was done in Sri Lanka from 2005 to 2006, showed that the commonest weapon used for homicide was firearms (31%) while explosives recorded the second highest as this was the civil war period and almost all the deaths related to ethnic struggle were caused by firearms and bombs (96%) whereas 47% of previous enmity deaths were caused by firearms. [9] The war in the Northern province of Sri Lanka not only opened a pathway for the influx of sophisticated guns to militants but also to a situation where such weapons could be purchased relatively cheaply by criminal and contract killers during that period. According to UNODC, Firearms were involved in more than half of all homicides worldwide in 2017.[2] In Italy, handguns were used in more than 33% of homicides. In underdeveloped countries like Pakistan, firearms were the causative agent in 86% of the cases because of prevailing terrorist activities. [13,14] But in our study, blunt and sharp weapons were commonly used. At the same time, firearms only accounted for 3.8%, and this dramatic change could be because of the end of the thirty-year ethnic war, the available number of lethal weapons also less in society, as well as a strict prohibition to possess or use a personal weapon in the country. The choice of the weapon used appears to be related to the stochasticity of weaponry used in a particular society.

Our present research revealed that blunt and sharp weapons have become more popular, leading to cuts, lacerations, and stab injuries. In contrast to our study, though only 5% of stab injuries were recorded here, the chest was the primarily targeted area of the body, and stab injury was the commonest nature of the injury identified in underdeveloped countries.[15] The study of the southern province of Sri Lanka revealed that craniofacial involvement is the single most region (100%) in homicides due to blunt weapons, and the brain was the internal organ frequently affected (88%).[16] In contrast, injuries due to firearms and sharp weapons chest were targeted. In this study, most of the injuries on the

male as well as female victims were inflicted on the head, face, neck, and multiple regions of the body and were due to blunt and sharp trauma. These body regions are chosen because of their instantaneous fatality. The injury distribution on the body of females is suggestive of intimate partner violence or dowry death. [17,18]

Normally physical fitness is more in males compared to females. Hence, highly lethal weapons against targeted areas like the head and chest are used against them to ensure death results in hemorrhagic shock and severe craniocerebral injury leading to a fatal outcome. Our study shows that cut injury, laceration, stab injury, and firearm injury were mostly seen in the male population.

Though females are less in number in homicide, significantly, they have succumbed to gender-based violence.[2] Close relatives or intimate partners are the culprits most frequently. The reason for this is men's fixed perception towards women; most think that men have the right to punish women or that they should dominate them. [19] Therefore, understanding the extent and patterns of killing women and girls requires a dedicated analysis of intimate partner/family-related homicide. World Health Organization (WHO) report revealed that men who have poor education, alcohol abuse, abused by someone during childhood, and mother of them had been a victim of gender-based violence, unequal gender norms, a sense of male dominance, and attitude toward that normalcy of the use of violence have more chance to be the assailant of this type of brutal acts.[19] Overall, the age pattern for female homicides also shows that women are less likely to be murdered as they age.[21,22]

The current study revealed that mortality following asphyxia-related homicidal deaths, including mechanical airway obstruction (manual and ligature strangulation) and lack of breathable air(suffocation), were more common among the female population. The same pattern was seen in the United States, developing countries like India, and underdeveloped countries like Pakistan. Among asphyxia-related deaths, the largest category was ligature strangulation, followed by manual strangulation and suffocation.[17,23,24] Research done in South Africa represented the significance of a difference between victims who were strangled, and the overall female homicide group was found, with a more significant proportion (28.8%) of older women within this group ($p < 0.00$).[25] In contrast to our study, where no such genital injuries were associated with asphyxia-related injuries, the previous research done in underdeveloped countries

like South Africa and developed countries like the United States shows that rape was the significant motive for female victims with strangulation injuries.[23,25] Overall, asphyxia methods such as smothering and strangulation were common among females since they were physically weak and unable to oppose the assailant. This method can cause instant incapacitation, which may help the assailant to commit another crime like sexual abuse or cause further injuries with any resistance. [26]

Homicide by the infliction of a burn injury is another critical issue that has received little attention in the literature. Although burn injuries account for 10%, the prevalence is higher among females. Most of the time, the motive for the killing was marital conflicts, according to the history mentioned in medicolegal reports. By contrast, In North Africa noted male predominance.[27] Homicidal burns occurred most frequently in private homes for female victims and public places for male victims.[27] Burn is a common method of killing in dowry disputes in our neighboring country, India.[28]

A previous study of our country concluded that the major causes of murders in the Rathnapura police division are informal sexual relations, alcoholism, poverty, illiteracy, family background, revenging purposes, monetary purposes, and hot temper.[29] In the southern province of Sri Lanka, like Galle, most affected people were unemployed (40%), and 47.5% were blue color workers.[16] In India, the majority of the affected women were uneducated, came from villages (64.1%), obtained impoverished income, and 90% were married.[28] The above factors made these women more vulnerable. The present study also revealed the same observations with the available sources. Women of poorer socioeconomic status are most susceptible, so strong legislation is required to protect women.

Limitations of the Study

We could not get the exact information regarding the social background of victims, such as occupation, drug history, and whether the patient is alone or not, as This is a retrospective study. Depending on the available weapon type in the geographical area, the homicide method also differs. In our research, locally available weapons are more common than guns. So, this study is restricted to a particular area and could or could not apply to other areas. In addition, the number of victims was small, limiting the interpretative power of the results.

Conclusions

The nature of the injury and the cause of death in homicides had a significant relationship with the

gender of victims because the weapons of high lethality were primarily used to kill male victims, whereas the weapons of low lethality were mainly used to kill female victims. This may depict the cultural attitudes toward gender in the respective demographic area involved in our study. Further research may be needed to question the attitudes toward gender. The trend and patterns of homicides could be further evaluated to control this crime on the island. Awareness programs regarding the demographic and socio-economic background of homicides must be paramount to curtail the incidence of homicides in the future. As long as this act of homicide persists, every medicolegal expert must be thoroughly acquainted with the nature and types of the crimes so that the judiciary may come out with a proper verdict to punish the guilty.

Disclosure statement

Conflicts of Interest: The authors declare that they have no conflicts of interest.

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