

Epidemiological Profile and Pattern of Injuries of Femicide in South Kerala-15 Year Autopsy Based Study

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Abstract

Introduction: Femicide is the intentional killing of women and girls because of their gender. It is an extreme manifestation of violence against women and girls rooted in misogyny and harmful beliefs and norms.

Aims: To analyze the epidemiological profile and pattern of injuries in femicide cases in South Kerala over a 15-year period using autopsy records, in order to identify demographic trends, common causes, and characteristic injury patterns.

Materials & Methods: This is a retrospective study conducted at the Department of Forensic Medicine, Government Medical College, Thiruvananthapuram, analyzing femicide cases over a 15-year period from January 1, 2002, to December 31, 2016, with a total sample size of 238 cases.

Result: Period of survival for majority of victims is less than 1 day only. 2 of them alone survived for a period of greater than a month before dying. In a similar study it is noted that of the 181 cases, 21% (46 cases) were brought dead to the hospital, victims of hanging and jumping typically survived less than a day, assault victims survived for an average of 3 days (range: 0–16 days), poison victims survived 5 days (range: 0–43 days), and burn victims survived 6 days (range: 0–102 days).

Conclusion: We concluded that the lack of proper data on femicides in India is a major issue, as most of the gender-based violence against women in the family go unreported or underreported with no standardised method in place to accurately identify it.

Keywords: Femicide, Gender-based violence, Homicide, Autopsy, Injury patterns.

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Introduction

Femicide, defined as the intentional killing of women and girls because of their gender, is an extreme manifestation of violence against women and girls rooted in misogyny and harmful societal norms. It represents a serious public health and human rights issue that remains under-documented, under-researched, and poorly understood in India. This phenomenon manifests in several forms, including dowry deaths, honor killings, intimate partner violence, and female infanticide, reflecting deeply entrenched cultural practices and gender inequities. Despite legal frameworks designed to protect women, femicide continues to occur at alarming rates. Globally, the United Nations reports that approximately 140 women and girls are killed daily by intimate partners or family members, with

India contributing significantly to these figures. However, the lack of specific femicide data hinders efforts to understand and address the issue effectively. The Vienna Declaration on Femicide (2012) expanded the definition of femicide to include killings resulting from intimate partner violence, torture, honor-related murders, armed conflict, dowry-related killings, sexual orientation or gender identity-based killings, indigenous or aboriginal-targeted killings, female infanticide and sex-selective foeticide, genital mutilation-related deaths, witchcraft accusations, and other forms of organized crime-related killings. While the term "femicide" is not legally recognized in India, it manifests through various violent acts, with over 4.45 lakh cases of crimes against women reported

by the National Crime Records Bureau in 2022, reflecting a 4% increase from the previous year. Gender-based violence affects one in three women globally, and in India, urban centers such as Mumbai remain hotspots. In 2021, Mumbai recorded 5,543 crimes against women, marking a 21% increase from the previous year, with femicide representing the most extreme form of such violence. Autopsy-based studies provide critical insights into femicide patterns. A five-year review from Seth G.S. Medical College and KEM Hospital, Mumbai, analyzing 1,460 female deaths, found that 12.3% were indicative of gender-based violence (GBV), with two-thirds of victims married and six out of ten deaths perpetrated by husbands or intimate partners. A subsequent cross-sectional study of five years of autopsies in Mumbai found a significant proportion of unnatural female deaths attributable to GBV, predominantly in domestic settings, with burns being the most common cause of death. In Sahiwal, an autopsy-based study reported that the most commonly affected age group was 20–29 years (45.2%), 61.6% of victims were married, and 87.7% were from rural areas. Firearms caused 42.5% of deaths, followed by asphyxia (19.2%), blunt injuries (12.3%), sharp injuries (11%), sexual assault with asphyxia (5.5%), poisoning (4.1%), and other causes including burns and stab injuries (1.4%). Husbands were the alleged offenders in 59.5% of cases, and motives included honor killings and financial or property disputes [1]. Studies focusing on strangulation deaths found that women under 30 years comprised over 50% of victims, with sexual assault preceding death in 77.55% of cases. Intimate partners were frequent perpetrators, urban areas accounted for 64% of cases, and manual strangulation was most common, with fractures in only 17.96% of victims [2].

Mellouki et al. observed that inactivity and lack of healthcare engagement were risk factors for spousal homicide, with marital homes being the preferred location and weapons including sharp objects, firearms, and blunt instruments [3]. Mohanty et al. analyzed 150 femicide cases over five years, finding that victims were commonly 11–40 years old, married, illiterate, rural, economically disadvantaged, and housewives, with death often due to blunt or sharp cranio-cerebral trauma and little evidence of defensive injuries [4]. Alexander AL et al. reported that out of 271 homicides, 259 (96%) could be categorized, with 181 (70%) being femicides. Differences between cohorts included causes of death, age at death, and involvement of murder-suicide [5]. In a study of 84 alleged dowry deaths, most victims were illiterate housewives from lower socioeconomic groups, with 39.29% of deaths occurring within the first year of marriage, and asphyxia as the cause of death in 50% of cases [6]. Another autopsy-based study of 328 women in

the reproductive age group in Mangalore found that two-thirds of homicidal deaths were due to blunt-force trauma, ligature strangulation, and sharp-force trauma, while one-third were due to burns. The manner of death was classified as suicide in 45.4% of cases, accident in 43.6%, and homicide in 4.6% [7]. Collectively, these studies indicate that femicide in India predominantly affects young, married women, often in domestic settings, with intimate partners as primary perpetrators. Blunt-force trauma, sharp-force trauma, asphyxia, burns, and firearms are common causes of death, highlighting the urgent need for improved data collection, targeted interventions, and strengthened legal protections to address this pervasive form of gender-based violence. Study aims to analyze the epidemiological profile and pattern of injuries in femicide cases in South Kerala over a 15-year period using autopsy records, in order to identify demographic trends, common causes, and characteristic injury patterns.

Materials and Methods

Type of Study: A retrospective study.

Place of Study: Department of Forensic Medicine of Government Medical College, Thiruvananthapuram.

Study Duration: From January 1, 2002 to December 31, 2016

Sample Size: 238 patients injuries of femicide.

Inclusion Criteria

- Female autopsy cases conducted in South Kerala during the 15-year study period.
- Deaths classified as homicidal and identified as femicide.
- Cases with complete autopsy reports, including external and internal findings.
- Availability of police investigation reports and other relevant documentation.
- Female victims of all age groups

Exclusion Criteria

- Deaths due to accident, suicide, natural causes, or undetermined causes.
- Cases with incomplete autopsy or investigation records.
- Deaths where femicide cannot be conclusively established.
- Cases occurring outside South Kerala, if outside the geographic scope of the study.

Study Variables

- Age of the victim
- Marital status
- Occupation
- Residential area

Statistical Analysis: Data were analyzed using R software version 3.6.3. All tests were 2-tailed, and P values not greater than 0.05 were considered significant. Quantitative variables were reported as mean \pm standard deviation. Qualitative variables are reported as proportions and percentages. The t-

test was used to determine if there is a significant difference between the means of two groups and the Chi-square test was used to determine the association between categorical variables.

Result

Table 1: Distribution of sociodemographic details

Study	Males (%)	Females (%)
Pokorny (1965)[8]	80.2	19.8
Frank Zimring(1968)[9]	80	20
Richard Block(1975)[10]	86	14
Nadeem et al (2022)[11]	75.1	24.9
Pathak (2024)[12]	87.04	12.96
Our study	75.13	24.87

Age	Frequency	Percentage
Less than 1 year	9	3.8
1 to 10 years	15	6.3
11 to 20 years	18	7.6
21 to 30 years	38	16.0
31 to 40 years	50	21.0
41 to 50 years	43	18.1
51 to 60 years	24	10.1
Greater than 60 years	41	17.2
Total	238	100.0

Table 2: Distribution of Category

Category	Cause	Number of Cases (n)
Nature of Cause of Death	Traumatic	212
	Non-traumatic	6
	Traumatic and non-traumatic	21
Traumatic Causes	Sharp force injuries	68
	Blunt force injuries	135
	Sharp and blunt injuries	12
	Burns	15
	Sharp, blunt and burns	2
	Not applicable	6
Non-Traumatic Causes	Poisoning	2
	Drowning	9
	Mechanical asphyxia	14
	Others	1
	Not applicable	212

Table 3: Distribution of Nature of injury

Type of Injury	Number of Cases (n)
Abrasion	131
Contusion	142
Lacerated wound	81
Incised wound	74
Incised penetrating / perforating / amputating wound	34
Abraded contusion	38
Sutured wounds	14
Pressure abrasion	28
Burns	17

Table 4: Distribution of weapon used

Weapon Variable	Category	Number of Cases (n)
Use of Weapon	Present	141
	Absent	63
	Not recovered	34
Type of Weapon Used	Single-edged knife	48
	Double-edged knife	8
	Heavy cutting weapon	24
	Rubber tapper's knife	3
	Blunt object	48
	Sword	3
	Ligature material	23
	Bullet	0
	Other sharp objects	2
	Scissors	1
	Explosives	0

Table 5: Distribution of pattern of traumatic injuries

Parameter	Category	Number of Cases (n)
Region of Body Involved	Head	125
	Neck	129
	Chest	69
	Abdomen	40
	Thigh	11
	Upper limb	27
	Leg	22
Organ Involved	Brain	96
	Heart	11
	Right lung	15
	Left lung	20
	Liver	8
	Spleen	1
	Mesentery	9
	Small intestine	11
	Large intestine	4
	Stomach	2
	Pancreas	0
	Left kidney	1
	Right kidney	0
Skull Bones Involved	Temporal	16
	Frontal	16
	Parietal	5
	Occipital	6
	Middle cranial fossa (MCF)	13
	Anterior cranial fossa (ACF)	9
	Posterior cranial fossa (PCF)	0
Intracranial Bleed	Subarachnoid hemorrhage (SAH)	70
	Subdural hemorrhage (SDH)	54
	Extradural hemorrhage (EDH)	2

Table 6: Distribution of Period of Survival

Days Survived	Frequency (n)	Percentage (%)
Less than 1 day	200	84.0
1 day to 1 week	28	11.8
1 week to 1 month	8	3.4
Greater than 1 month	2	0.8
Total	238	100.0

Table 7: Distribution of Treatment Received

Treatment Received	Number of Cases (n)	Percentage (%)
No treatment received	181	76.1
First aid only	9	3.8
Supportive measures	10	4.2
Supportive measures with antibiotics	2	0.8
Inpatient (IP) management	22	9.2
Inpatient management with surgical intervention	14	5.9
Total	238	100

Table 8: Distribution of time of incidence and place of incidence

Parameter	Category	Number of Cases (n)
Time of Occurrence	Morning	48
	Afternoon & Evening	72
	Night	94
	Time could not be ascertained	24
Place of Occurrence	House	187
	Road or street	18
	Workplace	2
	Others	31

Table 9: Distribution According to Type of Relationship / Motive

Relationship / Motive	Frequency (n)	Percentage (%)
Intimate partner	86	36.1
Family member	52	21.8
Other interpersonal	37	15.5
Robbery	7	2.9
Organized criminal groups	3	1.3
Socio-political	2	0.8
Not known	51	21.4
Total	238	100.0

Table 10: Distribution According to Number of Accused

Number of Accused	Number of Cases (n)
One	42
Two	7
Three	1
Four	7

Table 11: Distribution According to Relationship Between Assailant and Victim

Relationship	Number of Cases (n)
Husband	81
Wife	3
Mother	11
Father	15
Siblings	2
Son	9
Others	117

DISTRIBUTION OF VICTIMS ACCORDING TO THE RELIGION (N=238)

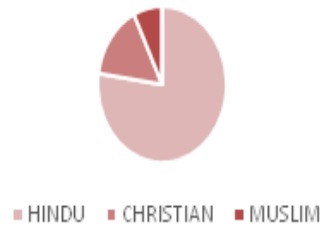


Figure 1: distribution of victims according to the religion



Figure 2: Yearly Distribution of Femicides

DISTRIBUTION OF NATURE OF CAUSE OF DEATH

■ Traumatic ■ Nontraumatic ■ Bothtraumatic and non traumatic

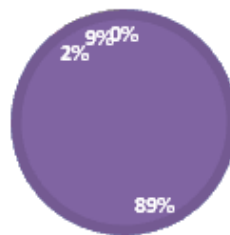


Figure 3: Distribution of Nature of Cause of Death

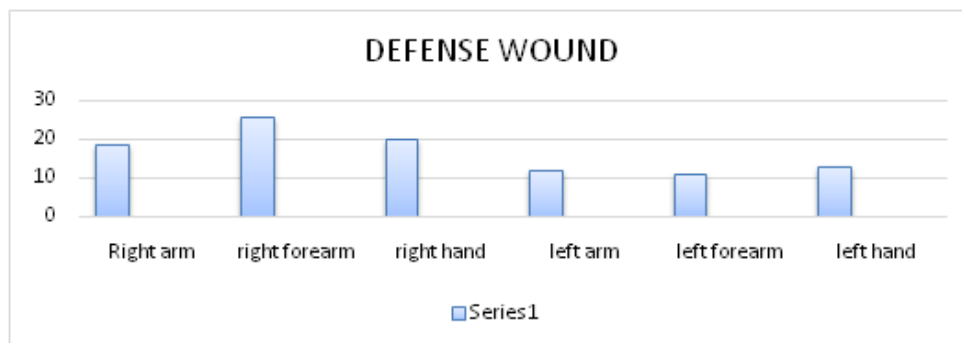


Figure 4: Defense wound

Out of the total 957 autopsies reported during the study period 238 were of female victims, which contribute to nearly 24.87% with a male female ratio of 3:1. The lowest age among the females was 6 days and highest was 84 years. The maximum females were above 60 years of age and 9 girls less

than 1 year were also there. The greatest number of femicides was identified in the year of 2007. When gender distribution is sought in each age group, it is found that the males are predominating in all age groups except in the age group <10 years. Among the 17 cases < 1 year, 9 cases were females and

among the 20 cases between 1-10 year age group, 15 were females. The other important observation is that in all the 9 cases < 1 years, it was the mother who was the accused. It was found out that 77% of females were Hindu, 15% were Christians and 17% were Muslims. Of the total cases, 212 cases were traumatic in nature and 6 were non traumatic. In our study, blunt injuries contribute to majority of the traumatic injuries, followed by sharp injuries, burns and combined sharp and blunt injuries. In a similar study conducted by Pathak et al noted that burns were the leading cause of death, accounting for 58% (105 cases) of the deaths, followed by hanging in 20% (36 cases) and poisoning in 16% (29 cases) [13]. Non traumatic injuries are contributed by mechanical asphyxia, drowning and poisoning. Out of 238 cases, 74 were incised wound, 34 were incised penetrating, perforating or amputating wound. In 141 cases, weapon used for crime was recovered. In traumatic injuries head and neck is the most common organ involved followed by chest injuries, abdominal injuries, upper limbs and lower limbs. Among head injury cases with a skull fracture, the temporal bone and frontal bone has equal incidence. Head injury cases with intracranial hemorrhages were of the following varieties-70 cases were associated with subarachnoid hemorrhages followed by subdural haemorrhages in 54 and the least was extradural hemorrhage in only 2 of the cases. The injury sustained to the head was the most common cause of death and the most common organ to be involved which resulted in a fatality was the brain. Murder suicide was seen in cases 12.9% cases in our study which is a significant proportion need further evaluation. In a 5-year retrospective study conducted in Jamnagar region, Gujarat state, from 2000 to 2004, 8 mothers committed 13 murders involving 3 male and 10 female victims and, in every case, it was followed by suicide of the assailant mothers. During the study the annual incidence of murder-suicide was about 1.8 cases. Methods both for killing and suicide were either burning or drowning. All the mothers were legally married and living with the family. Family and family related matters were the main motives for killing. Defense wounds are seen in 62 cases and most commonly in the right fore arm. The defense injuries showed a predominance in the right upper limbs showing the predominance of right-handedness in the population. Hesitation cuts were only seen in 2 cases. Period of survival for majority of victims is less than 1 day only. 2 of them alone survived for a period of greater than a month before dying. In a similar study it is noted that of the 181 cases, 21% (46 cases) were brought dead to the hospital, victims of hanging and jumping typically survived less than a day, assault victims survived for an average of 3 days (range: 0-16 days), poison victims survived 5 days (range: 0-43 days), and

burn victims survived 6 days (range: 0-102 days). Out of the total 238 femicides, only 57 received treatment. 22 were managed as in patients and 14 received surgical interventions. In a similar study conducted in Bombay states that the deaths occurred in home or private spaces (99%, 179 cases), with only 1% (2 cases) occurring outside the home. Majority of the crimes were done by intimate partners of the victim and by their family members. In almost all studies in terms of perpetrators, husbands or intimate partners were responsible in majority of incidents and other family members were also identified in significant proportion. The two-thirds of the women who died were married and six out of ten deaths were perpetrated by husbands or intimate partners was a relevant finding of a study conducted in Mumbai. There was evidence of natural disease in 13 cases and 40 cases show evidence of definite motive which include family disputes, dowry deaths and honour killing. In another study 40.5 % cases the apparent motive was other reason followed by 25% family dispute, 23.8% honour killing and 10.7% financial dispute. There were 15 cases of dowry death in our study which is on a rise now even south Kerala being considered high for literacy. The most heinous form of domestic violence since ages is harassment for dowry finally ending up in death of the woman. Determining the reasons behind the dowry deaths helps the government in revising the laws from time to time to take a serious action against the accused of dowry deaths. There were 16 cases of sexual assault in our study. There is a wide gap between reported prevalence and actual prevalence; reported numbers are almost always an underestimation of actual prevalence. Every hour, at least two women are sexually assaulted and every six hours, a young married woman is beaten to death, burnt or driven to suicide. It is appalling to learn that 28.4 per cent of pregnant women suffer domestic violence. The violence against women creates a sense of insecurity and fear in the community. The complex issue can be tackled by providing comprehensive care pro-actively. A multi-dimensional and multi-agency team including access to psychosocial support is to be made available to deliver holistic care under one roof in district hospital setting.

Discussion

The distribution of homicides across various studies highlights a significant proportion of female victims. In our study of 238 female autopsies in South Kerala, there is a concerning prevalence of femicide, with victims ranging from infants to elderly women, often due to blunt or sharp trauma, head injuries being the most fatal. Family members, particularly husbands or intimate partners, were the main perpetrators, reflecting rising domestic violence, dowry-related deaths, and

honour killings. Defense injuries suggest right-handed assailants, and survival was typically less than a day. Sexual assaults, though fewer, remain underreported. These findings underscore the urgent need for multi-agency, holistic interventions to address gender-based violence and protect women.

Conclusion

We concluded that the lack of proper data on femicides in India is a major issue, as most of the gender-based violence against women in the family go unreported or underreported with no standardised method in place to accurately identify it. It indicates the deep-rooted gender inequalities and societal norms that existing in our country. It is important for communities and governments to take a multi-faceted approach that includes prevention, intervention, and support involving initiatives such as education and awareness-raising campaigns, stricter laws and law enforcement to hold perpetrators accountable, and increased access to support services for survivors.

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