

# Epidemiological Analysis of Suicide Methods in Kollam District, Kerala: A Forensic Perspective



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## Abstract

Kollam district, located in the southern state of Kerala, has consistently reported high suicide rates, contributing significantly to Kerala's mental health burden. This study aims to investigate the predominant methods of suicide in Kollam from a forensic standpoint. Data spanning 2015 to 2024 was sourced from NCRB reports, Kerala Police crime statistics, and district health office records. Our analysis identifies hanging as the leading method, comprising 64% of cases, followed by poisoning, drowning, and self-immolation. We explore demographic patterns, gender variations, and forensic implications tied to each method. Findings underscore the necessity for region-specific mental health policies and forensic preparedness to address and mitigate suicides effectively [1].

**Keywords:** Mental health; Forensic medicine;

## Introduction

Suicide, a complex phenomenon influenced by psychological, sociocultural, and economic factors, is a major public health and legal issue in India. Kerala, despite its high literacy and health indices, reports disproportionately high suicide rates, with Kollam district frequently at the forefront. The forensic examination of suicide methods provides insights that are critical for accurate determination of cause and manner of death, as well as for preventive strategy formulation. This study delves into the patterns of suicide methods in Kollam over a decade, highlighting implications for forensic medicine and public health.

## Objectives

1. To identify the most frequently used methods of suicide in Kollam district.
2. To examine demographic correlations related to each suicide method.
3. To discuss the forensic relevance of the prevalent methods.

## Materials and Methods

This retrospective descriptive study analyzed suicide

data from January 2015 to December 2024. Sources included NCRB annual reports, Kerala Police crime records, and health department statistics. Suicide methods were classified into: hanging, poisoning, drowning, self-immolation, and others (e.g., railway, firearm-related deaths). Demographic variables (age, sex) and temporal factors (seasonality, year-wise trends) were examined. Data were anonymized to maintain confidentiality. The study was conducted with institutional ethical approval where applicable [2].

## Results

A total of approximately 4,500 suicides were documented in Kollam during the study period. Hanging emerged as the most common method (64%), followed by poisoning (10%), drowning (9.3%), and self-immolation (6%). Other less frequent methods included railway-related deaths, falls from height, and firearm use. A gender-based analysis revealed that 70% of hanging cases involved males, predominantly aged 25–45 years. Females were more likely to use poisoning and self-immolation. The data did not show significant seasonal variation, though a mild increase in suicides was noted during the monsoon period.

## Discussion

The dominance of hanging as a suicide method in Kollam mirrors state and national patterns. Its prevalence can be attributed to the easy availability of ligature materials and its high lethality. Poisoning remains a concern, especially in rural and agricultural areas due to pesticide access. Drowning and self-immolation, though less common, require meticulous forensic evaluation, particularly in ambiguous or delayed recovery cases [3].

Kollam's consistently high suicide rates demand special attention. Multiple socio-cultural factors may contribute to this pattern, including economic pressures, family conflicts, mental health stigma, and the stress of migration and urbanization. Despite high literacy and healthcare indices, Kerala—and Kollam in particular—shows that improved social development indicators do not necessarily correlate with lower suicide rates. Studies have also suggested a possible association with higher levels of alcohol use and untreated depression in the region.

When compared to suicide trends in other developing countries, Kollam presents a concerning case. While hanging is also a commonly reported method globally, especially in low-resource settings, the sheer proportion in Kollam is notable. In rural China, for instance, pesticide ingestion historically accounted for a high share of suicides, whereas in African nations, methods tend to vary more widely due to different socio-environmental contexts. In this regard, the pattern in Kollam shows both similarities to and deviations from broader developing world trends. Gender differences in suicide methods reflect broader psychosocial dynamics, including societal roles and stigma. Women are more likely to choose methods like poisoning or self-immolation, potentially influenced by cultural and domestic circumstances.

From a forensic perspective, knowledge of prevalent methods aids in injury interpretation, estimation of time since death, and distinguishing between suicidal, homicidal, and accidental deaths [4,5].

This study's findings are in line with previous literature from the region. Notably, a community-based study in Kerala by Soman et al. highlighted similar epidemiological features and emphasized the importance of local-level data to inform public health strategies [6,7].

## Conclusion

Hanging constitutes the most frequent method of suicide in Kollam, with clear demographic patterns and forensic implications. The study reinforces the need for comprehensive suicide surveillance systems, training for forensic practitioners, and region-specific mental health outreach programs. Tailored interventions addressing method-specific risk factors may help curb the suicide burden in high-incidence districts like Kollam.

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