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Sociodemographic Profiling and Trend Analysis of Dowry-Related Female Mortalities in Northern Tamil Nadu (2021–2026): A Retrospective Medico-Legal Study

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ABSTRACT

Background: Dowry-related unnatural mortality among young married women remains a critical medico-legal concern in India, requiring executive magistrate inquests and autopsies for suspicious deaths within seven years of marriage. This study profiles sociodemographic vulnerabilities and analyses six-year mortality trends in Northern Tamil Nadu (2021–2026).

Methods: A retrospective, cross-sectional study examined postmortem and inquest records (n=205) from a tertiary medico-legal centre covering Vellore, Ranipet and adjoining districts from January 2021 to December 2026. Data on demographics, marital duration, household structure and manner of death were analyzed using SPSS v24.0 via descriptive statistics and Pearson's Chi-square tests ($p<0.05$).

Results: Victims had a mean age of 25.0±4.8 years, with 73.2% aged 21–30 and 68.3% dying within three years of marriage. Most were rural residents (59.0%), lower socioeconomic status (80.0%), illiterate (83.9%), homemakers (63.9%) and in nuclear families (78.0%). Annual cases peaked in 2024 (n=48, 23.4%) and 2021 (n=47, 22.9%). Hanging predominated (51.2%), followed by poisoning (18.0%) and burns (17.1%) with manner of death significantly associated with education ($p=0.027$) and family type ($p=0.03$).

Conclusion: Young, illiterate and dependent women in nuclear household face increased early-marriage related mortality risk. Thus, targeted female education and marital counselling are needed to reduce the marriage related mortality risk.

Key Words: *Dowry death; Forensic autopsy; Trend analysis.*

INTRODUCTION

Dowry-related violence and unnatural mortality among young married women remain pervasive public health and medico-legal challenges across India despite stringent statutory deterrents such as the Dowry Prohibition Act of 1961 and Section 304-B of the Indian Penal Code (now transitioned to Section 80 of the Bharatiya Nyaya Sanhita) [1,2]. Within the Indian medico-legal framework, suspicious or unnatural deaths of married women occurring within seven years of marriage mandate an executive magistrate inquest and comprehensive postmortem examination to establish the exact cause and manner of death [3]. Epidemiological evidence across South India consistently indicates that these preventable fatalities disproportionately affect young women in their peak reproductive years, often driven by converging vulnerabilities including low educational attainment, financial dependency and early marital adjustment stress [1,4].

While historical forensic reports in Tamil Nadu and neighbouring southern states highlighted thermal burns as the primary mechanism of dowry deaths, contemporary surveillance demonstrates a marked epidemiological shift toward asphyxial hanging and self-poisoning [2,4]. Furthermore, forensic pathologists face critical diagnostic challenges in distinguishing suicidal acts from concealed homicides and sudden natural obstetric or medical emergencies presenting under suspicious

matrimonial circumstances [3,5]. Because multi-year longitudinal data evaluating spatial clustering alongside sociodemographic risk profiling in Northern Tamil Nadu remain scarce, the present retrospective study was undertaken to determine the sociodemographic vulnerability profile and analyse six-year mortality trends (2021–2026) across this region.

Objectives:
To determine sociodemographic vulnerability profile of dowry-related female mortalities in Northern regions of Tamil Nadu in six-year period (2021–2026) & to analyse the trend.

METHODOLOGY

A retrospective, cross-sectional, medico-legal observational study was conducted using postmortem and executive magistrate inquest records from a tertiary care medico-legal centre serving Northern Tamil Nadu in Vellore, Ranipet, and adjoining districts from January 1, 2021, to December 31, 2026 ($n = 205$). All unnatural or suspicious deaths of married females occurring within seven years of marriage registered under statutory dowry death provisions with complete demographic, marital, inquest and autopsy documentation were included, whereas deaths of unmarried females, cases where matrimonial disputes were conclusively ruled out and decomposed bodies with indeterminate cause of death were excluded.

Data were extracted using a pre-structured proforma covering victim age, rural or urban residence, socioeconomic status (Classes I–V), occupation, educational status (illiterate Vs literate), family structure (nuclear Vs combined/joint), duration of marriage, religion, type of marriage (arranged Vs love), year of death, police jurisdiction and postmortem manner of death (hanging, poisoning, burning, drowning and other causes). Institutional Ethics Committee approval was obtained with a waiver of informed consent for anonymized record review and data were analysed using SPSS version 24.0 via descriptive statistics (mean $\pm$ SD, frequencies, and percentages) and Pearson's Chi-square (χ^2) tests, with $p < 0.05$ considered statistically significant.

RESULTS

Among the 205 dowry-related female mortalities recorded across Northern Tamil Nadu between 2021 and 2026, victims had a mean age of 25.0 ± 4.8 years, with 73.2% ($n = 150$) belonging to the 21–30 years age group and 19.0% ($n = 39$) aged 20 years or younger (Table 1). Rural residents accounted for 59.0% ($n = 121$) of cases, lower socioeconomic strata (Classes IV and V) comprised 80.0% ($n = 164$), illiteracy was documented in 83.9% ($n = 172$), and homemakers constituted 63.9% ($n = 131$). Nuclear family households predominated (78.0%, $n = 160$) over combined/joint families (22.0%, $n = 45$), arranged marriages accounted for 83.9% ($n = 172$) and the mean marriage duration was 3.6 ± 1.4 years, with 50.2% ($n = 103$) of deaths occurring within two years of marriage and 68.3% ($n = 140$) within three years (Table 1).

Annual mortality trends over the six-year period peaked in 2024 ($n = 48$, 23.4%) and 2021 ($n = 47$, 22.9%), followed by 2022 ($n = 36$, 17.6%), 2023 ($n = 31$, 15.1%), 2025 ($n = 30$, 14.6%) and 2026 ($n = 13$, 6.3%) (Figure 1).

Table 1: Characteristics of victims of Dowry-Related Deaths (n = 205)

Variable	Category / Metric	Frequency (n)	Percentage (%)
Age Group	<18 years	4	2.0%
	18–20 years	35	17.1%
	21–30 years	150	73.2%
	31–40 years	16	7.8%
Residence	Rural	121	59.0%
	Urban	84	41.0%
Socioeconomic Status (SES)	Upper (Class I)	2	1.0%
	Upper Middle (Class II)	10	4.9%
	Lower Middle (Class III)	29	14.1%
	Upper Lower (Class IV)	78	38.0%
	Lower (Class V)	86	42.0%
Occupation	Housewife	131	63.9%
	Working	70	34.1%
	Student	4	2.0%
Education	Illiterate	172	83.9%

	Literate	33	16.1%
Type of Family	Nuclear	160	78.0%
	Combined (Joint)	45	22.0%
Duration of Marriage	Mean ± SD	3.6 ± 1.4 yrs	—
	<6 months	21	10.2%
	6 months – 1 year	21	10.2%
	1 – 2 years	61	29.8%
	2 – 3 years	37	18.0%
	3 – 5 years	53	25.9%
	5 – 7 years	12	5.9%
Religion	Hindu	197	96.1%
	Muslim	6	2.9%
	Christian	2	1.0%
Type of Marriage	Arranged	172	83.9%
	Love	33	16.1%

Figure 1: Annual trends of Dowry-related deaths (n = 205)

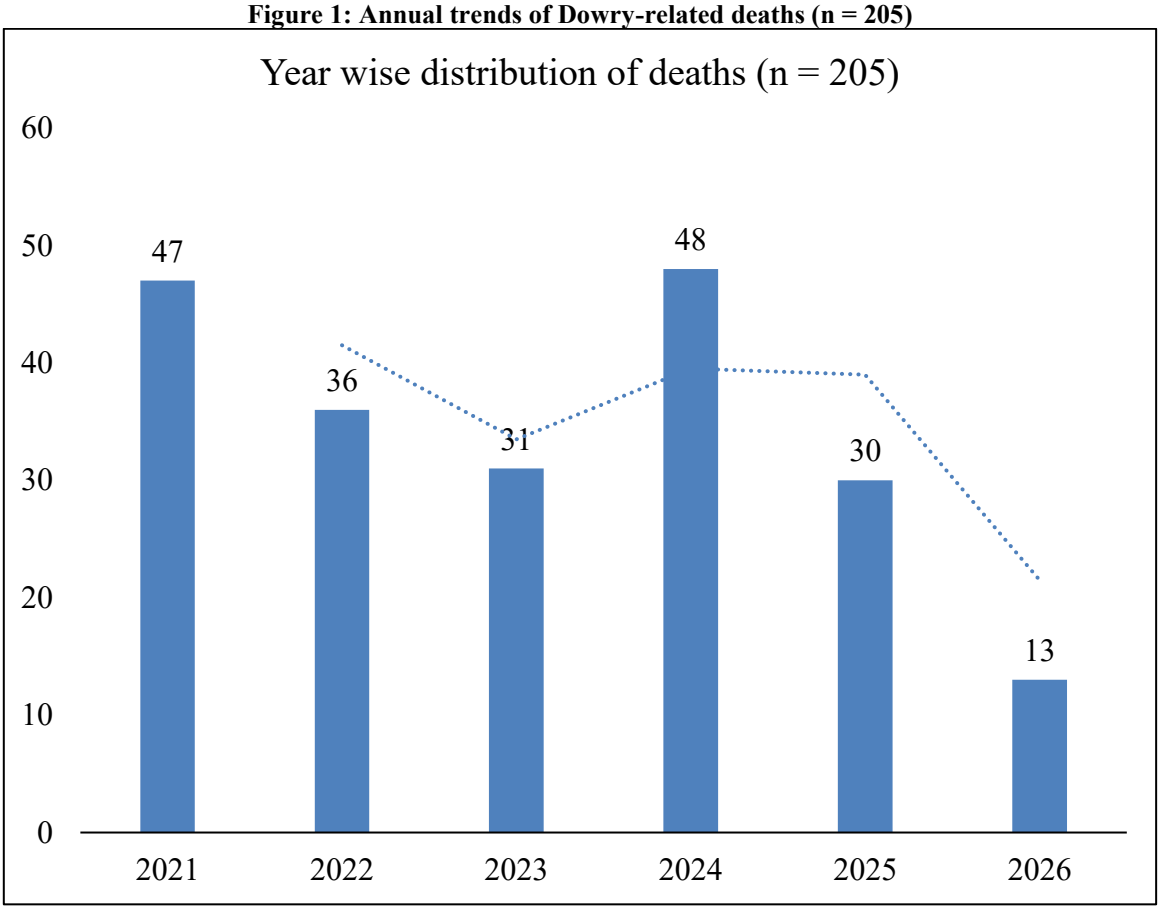
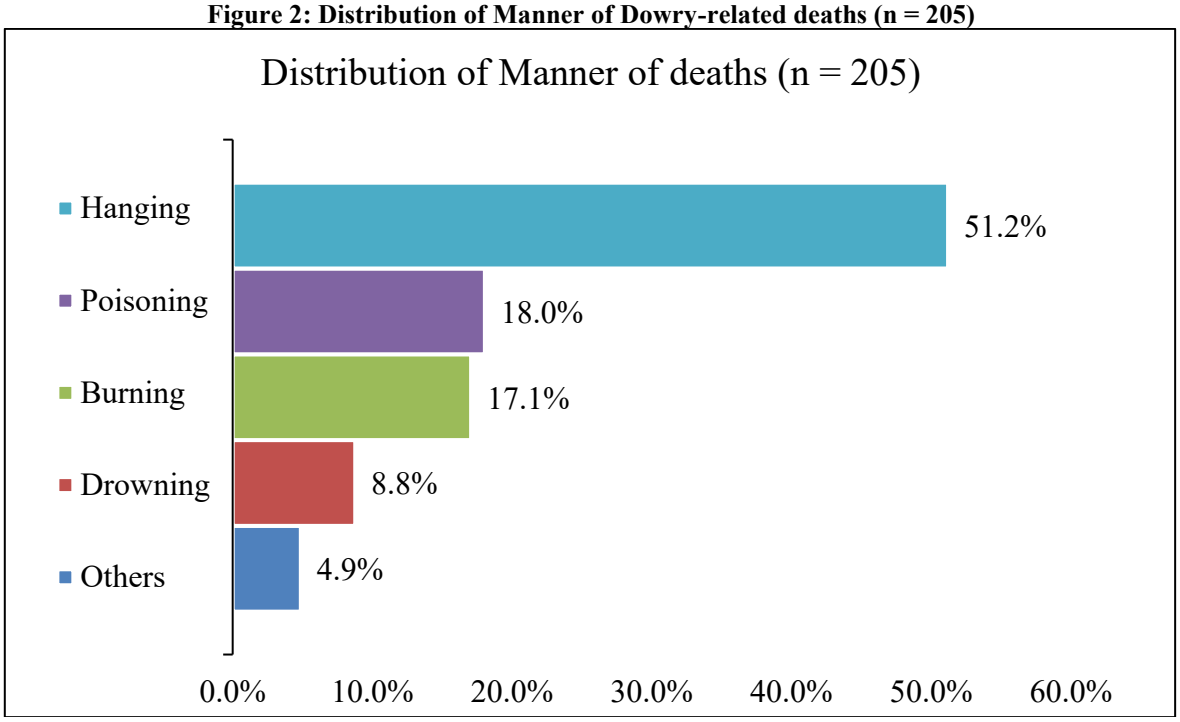


Figure 2: Distribution of Manner of Dowry-related deaths (n = 205)



Forensically, hanging was the leading manner of death (51.2%, $n = 105$), followed by poisoning (18.0%, $n = 37$), thermal burns (17.1%, $n = 35$), drowning (8.8%, $n = 18$) and other causes (4.9%, $n = 10$, comprising concealed homicidal strangulation/blunt trauma and sudden natural medical or obstetric emergencies) (Figure 2).

Table 2: Association of variables with manner of death among victims of Dowry-related deaths (n = 205)

Variables	Total (n)	Hanging n (%)	Poisoning n (%)	Burning n (%)	Drowning n (%)	Others n (%)	χ^2	p value
Age Group								
< 18 yrs	4	1 (25%)	1 (25%)	0	1 (25%)	1 (25%)	14.5	0.3
18–20 yrs	35	14 (40%)	6 (17.1%)	10 (28.6%)	2 (5.7%)	3 (8.6%)		
21–30 yrs	150	83 (55.3%)	26 (17.3%)	21 (14%)	14 (9.3%)	6 (4%)		
31–40 yrs	16	7 (43.8%)	4 (25%)	4 (25%)	1 (6.2%)	0		
Residence								
Rural	121	65 (53.7%)	22 (18.2%)	23 (19%)	8 (6.6%)	3 (2.5%)	6.1	0.2
Urban	84	40 (47.6%)	15 (17.9%)	12 (14.3%)	10(11.9%)	7 (8.3%)		
Socioeconomic Status (SES)								
Class I	2	2 (100%)	0	0	0	0	5.2	0.98
Class II	10	6 (60%)	1 (10%)	2 (20%)	1 (10%)	0		
Class III	29	15 (51.7%)	6 (20.7%)	4 (13.8%)	3 (10.3%)	1 (3.4%)		
Class IV	78	38 (48.7%)	16 (20.5%)	12 (15.4%)	8 (10.3%)	4 (5.1%)		
Class V	86	44 (51.2%)	14 (16.3%)	17 (19.8%)	6 (7%)	5 (5.8%)		
Occupation								
Housewife	131	68 (51.9%)	22 (16.8%)	22 (16.8%)	13 (9.9%)	6 (4.6%)	5.3	0.7
Working	70	35 (50%)	14 (20%)	13 (18.6%)	5 (7.1%)	3 (4.3%)		
Student	4	2 (50%)	1 (25%)	0	0	1 (25%)		
Education								
Illiterate	172	86 (50%)	29 (16.9%)	29 (16.9%)	18(10.4%)	10 (5.8%)	**10.9**	**0.027***
Literate	33	19 (54.3%)	8 (23%)	6 (17%)	0	0		
Type of Family								
Nuclear	160	86 (53.8%)	23 (14.4%)	27 (16.9%)	14 (8.8%)	10 (6.2%)	**10.7**	**0.03***
Joint	45	19 (42.2%)	14 (31.1%)	8 (17.8%)	4 (8.9%)	0		
Duration of Marriage								
< 6 months	21	11 (52.4%)	4 (19%)	4 (19%)	2 (9.5%)	0	23.8	0.3

6 months – 1 yr	21	8 (38.1%)	3 (14.3%)	7 (33.3%)	2 (9.5%)	1 (4.8%)		
1 – 2 yrs	61	27 (44.3%)	10 (16.4%)	14 (23%)	7 (11.5%)	3 (4.9%)		
2 – 3 yrs	37	27 (73%)	6 (16.2%)	1 (2.7%)	0	3 (8.1%)		
3 – 5 yrs	53	25 (47.2%)	11 (20.8%)	7 (13.2%)	7 (13.2%)	3 (5.7%)		
5 – 7 yrs	12	7 (58.3%)	3 (25%)	2 (16.7%)	0	0		
Religion								
Hindu	197	100 (50.8%)	36 (18.3%)	34 (17.3%)	17 (8.6%)	10 (5.1%)	2.7	0.95
Muslim	6	3 (50%)	1 (16.7%)	1 (16.7%)	1 (16.7%)	0		
Christian	2	2 (100%)	0	0	0	0		
Type of Marriage								
Arranged	172	90 (52.3%)	30 (17.4%)	29 (16.9%)	15 (8.7%)	8 (4.7%)	0.6	0.96
Love	33	15 (45.5%)	7 (21.2%)	6 (18.2%)	3 (9.1%)	2 (6.1%)		
Overall	**205**	**105 (51.2%)**	**37 (18%)**	**35 (17.1%)**	**18 (8.8%)**	**10 (4.9%)**	—	—

On Chi-square analysis (Table 2), manner of death showed statistically significant associations with educational status ($\chi^2 = 10.9, p = 0.027^*$), where drowning (10.4%) and other causes (5.8%) occurred exclusively among illiterate victims and with family structure ($\chi^2 = 10.7, p = 0.03^*$), reflecting higher hanging rates in nuclear families (53.8% Vs 42.2%) versus higher poisoning rates in joint families (31.1% Vs 14.4%).

DISCUSSION

The predominance of victims in the 21–30 years age bracket (73.2%, mean age 25.0 ± 4.8 years) and within the first three years of marriage (68.3%) aligns closely with autopsy-based investigations across India, confirming that early marital adjustment represents a period of heightened vulnerability for young married women [1, 6 & 7]. Comparable findings were reported in a South Indian study by Mohanty et al. (2013) [1], where 83.0% of victims were aged 18–26 years, 65.7% were childless and 77.2% died within four years of marriage. High rates of illiteracy (83.9%), economic dependency as homemakers (63.9%) and lower socioeconomic status (80.0%) severely constrain women's financial autonomy and access to institutional or legal protection during acute marital conflict [1, 6 & 8]. Similarly, Mohanty et al. (2013) [1] documented substantial vulnerability among rural homemakers (62.9%) and women with low educational attainment (53.0% illiterate), although their cohort showed a predominance of middle socioeconomic status (81.0%), highlighting regional socioeconomic differences across South India.

Household composition and residential setting also shaped mortality patterns in our cohort. Rural residents accounted for 59.0% of fatalities, reflecting barriers to timely crisis intervention, healthcare access and legal recourse in non-urban areas [6,8]. Furthermore, whereas Mohanty et al. (2013) [1] observed that joint-family environments (85.0%) and conflicts involving the husband or in-laws (75.0%) predominated, our study demonstrated a higher burden of deaths in nuclear households (78.0%), suggesting that domestic isolation and limited extended-family mediation may intensify acute psychological distress, while joint-family conflicts showed a distinct shift toward poisoning (31.1% vs. 14.4%, $p = 0.03$) (Kumar et al., 2013).

Over the six-year study period (2021–2026), annual dowry-related female mortalities in Northern Tamil Nadu showed fluctuating multi-year patterns rather than a steady decline, with peaks in 2021 ($n = 47$, 22.9%) and 2024 ($n = 48$, 23.4%), followed by lower counts in 2025 ($n = 30$, 14.6%) and 2026 ($n = 13$, 6.3%). Parmar et al., (2023) [9] showed variations in recorded suspicious and dowry-related deaths across study periods and jurisdictions reflect shifts in case reporting, inquest classification and investigative practices alongside underlying social risks. Furthermore, because data collection spans January 2021 through December 2026, the lower tally in 2026 should be interpreted cautiously given the observation window and potential delays in medico-legal or inquest registration.

The forensic distribution—led by hanging (51.2%) over poisoning (18.0%) and thermal burns (17.1%)—reflects a shift away from burns toward domestic hanging and toxicant exposure [6-8]. Nevertheless, thermal burns remain a substantial mechanism (17.1%) requiring thorough scene correlation and medicolegal evaluation to distinguish self-harm and accidental injuries from homicidal burning [8, 10 & 11]. Significant associations between manner of death and educational status ($p = 0.027$) as well as family structure ($p = 0.03$) further indicate that socioeconomic conditions and household dynamics influence lethal mechanisms. Finally, identifying concealed homicides and acute natural obstetric or medical emergencies within the 4.9% "other causes" category underscores the need for rigorous autopsy, toxicological and histopathological evaluation in all suspicious matrimonial deaths [8, 10].

Conflict of Interest: Nil

CONCLUSION

Dowry-related female mortality in Northern Tamil Nadu predominantly affects young, illiterate and nuclear households during the first three years of marriage. Hanging was the principal lethal mechanism. Targeted female education and early post-marital counselling are essential to prevent these avoidable fatalities. Reducing dowry deaths requires a shift from a reactive approach of investigating deaths to a proactive approach of preventing dowry harassment. Although legal provisions are essential for punishment and justice, legislation alone cannot eliminate this problem unless accompanied by changes in social attitudes and family practices. The focus must shift from investigating dowry deaths after they occur to identifying dowry harassment at its earliest stage and preventing further violence. Women's education, economic independence, family awareness, community participation, effective law enforcement and systematic medico-legal investigation should function together as essential components of prevention. Every dowry-related death should serve as a reminder of the urgent need for social reform and institutional accountability.

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