

A Comparison of Suicide Deaths among Men and Women in India: A Secondary Analysis of Data from 2019-2024

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Abstract: ***Background:** Suicide is a major public health concern with substantial social, psychological, and economic consequences. Examining differences in suicide deaths between men and women is important for understanding demographic patterns and informing prevention strategies. **Objective:** To compare the distribution of suicide deaths recorded among men and women in India between 2019 and 2024 and to describe the distribution of suicide deaths across age groups. **Methods:** A descriptive, retrospective secondary analysis was conducted using annual aggregate data provided in an Excel spreadsheet covering 2019-2024. Annual suicide deaths were summarized by sex, and percentage distributions, absolute changes, and relative changes were calculated. Age-group distributions were examined for the same period. Inferential statistical testing was not performed because the analysis used aggregate annual counts without individual-level observations or population denominators. **Results:** Total recorded suicide deaths increased from 139,123 in 2019 to 170,746 in 2024, representing a 22.7% increase. Male deaths rose from 97,613 to 125,449, while female deaths increased from 41,493 to 45,245. The male share increased from 70.2% to 73.5%, whereas the female share decreased from 29.8% to 26.5%. In 2024, the 18-29 and 30-44 age groups accounted for 33.1% and 32.2% of all recorded deaths, respectively. **Conclusion:** Recorded suicide deaths were consistently higher among men than women during 2019-2024. These findings support sex-responsive suicide prevention strategies while highlighting the need for population-based rates and more detailed analyses of contributing factors.*

Keywords: Age distribution, Gender differences, India, Public health, Suicide deaths

1. Introduction

Suicide is an important public health problem that affects individuals, families, communities and society. Its consequences extend beyond the individual death, producing considerable emotional distress among surviving family members and wider social and economic consequences. The World Health Organization recognizes suicide as a preventable public health problem requiring coordinated action across healthcare, education, employment, social welfare and other sectors [1].

Suicidal behavior is complex and multifactorial psychological distress, mental health conditions, substance use, relationship difficulties, financial problems, social isolation, chronic illness and other stressful circumstances may contribute to suicidal behavior. However, the contribution of these factors differs between individuals and populations. Consequently, suicide prevention requires an understanding of demographic patterns alongside social and psychological determinants [1].

In India, the National Crime Records Bureau (NCRB) compiles police-recorded suicide data through its annual *Accidental Deaths & Suicides in India* reports. These reports provide important information on the magnitude and demographic distribution of recorded suicide deaths [2]. Analysis of such data can help identify changes over time and population groups that warrant further investigation.

Sex differences are an important dimension of suicide epidemiology. Comparing the numbers of recorded deaths

among men and women can reveal differences in the distribution of the burden. Nevertheless, differences in death counts should not automatically be interpreted as differences in the underlying risk of suicide, because population sizes, age structures, reporting practices, and other factors may influence the observed patterns.

Although annual suicide statistics are published in India, examining several consecutive years within a single analytical framework allows changes in the overall burden and sex distribution to be described systematically. A six-year period also provides an opportunity to identify whether observed patterns represent a consistent trend or a temporary fluctuation.

Therefore, the present study examines recorded suicide deaths in India from 2019 to 2024, comparing the annual numbers and proportions among men and women and describing the age distribution of recorded deaths.

1.1 Objectives

The objectives of this study were:

- 1) To describe the annual number of recorded suicide deaths in India between 2019 and 2024.
- 2) To compare the number and proportion of recorded deaths among men and women between 2019 and 2024.
- 3) To examine the age distribution of recorded suicide deaths during the study period.
- 4) To discuss the implications of the observed patterns for suicide prevention and future research.

2. Materials and Methods

2.1 Study design

A retrospective descriptive study was conducted using secondary aggregate data covering six calendar years from 1 January 2019 to 31 December 2024.

2.2 Data source

Data was obtained from the official website of analysis was based on the NCRB's *Accidental Deaths & Suicides in India* reports. The dataset contained annual totals, sex-specific counts and age specific counts. The variables included were calendar year (2019-2024), number of recorded suicide deaths among men and women, total number of recorded suicide deaths and the number of deaths in each age group.

2.4 Statistical analysis

Descriptive statistical methods were used to summarize the data. Absolute changes and percentages were tabulated to describe temporal patterns. The analysis describes recorded counts and their distributions; it does not estimate individual-level risk or establish causal relationships. The analysis used

aggregate secondary data and did not involve direct contact with individuals or access to identifiable personal records.

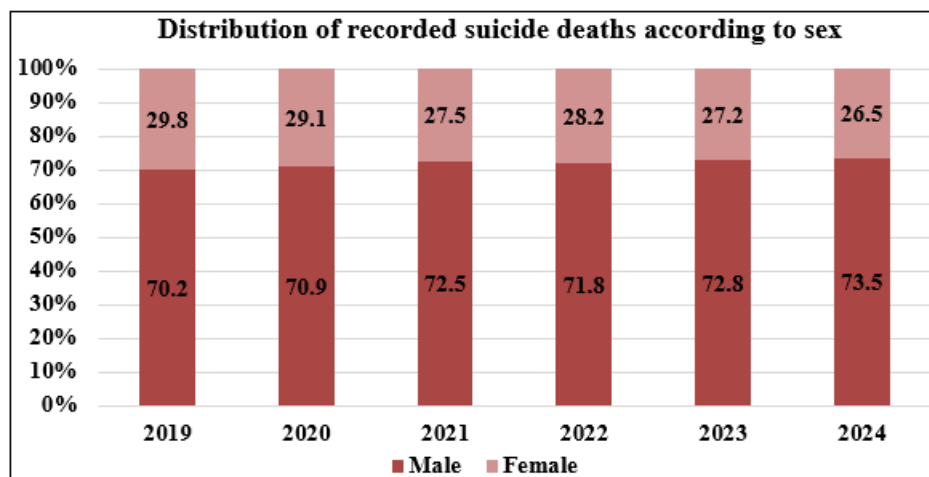
3. Results

3.1 Overall trends in recorded suicide deaths

The total number of recorded suicide deaths increased from 139,123 in 2019 to 153,052 in 2020 and 164,033 in 2021. The total rose further to 170,924 in 2022 and 171,418 in 2023 before declining slightly to 170,746 in 2024. Between 2019 and 2024, the total number of recorded deaths increased by 22.7%. The largest annual increase occurred between 2019 and 2020, while the overall count remained relatively stable during 2022-2024.

Table 1: Annual recorded suicide deaths by sex in India (2019-2024)

Year	Male, n (%)	Female, n (%)	Total
2019	97,613 (70.2%)	41,493 (29.8%)	1,39,123
2020	108,532 (70.9%)	44,498 (29.1%)	1,53,052
2021	118,979 (72.5%)	45,026 (27.5%)	1,64,033
2022	122,724 (71.8%)	48,172 (28.2%)	1,70,924
2023	124,730 (72.8%)	46,648 (27.2%)	1,71,418
2024	125,449 (73.5%)	45,245 (26.5%)	1,70,746



3.2 Comparison of male and female suicide deaths

Male deaths were substantially higher than female deaths in every year examined with an absolute increase of 28.5%. Female deaths increased from 41,493 in 2019 to 48,172 in 2022. Subsequently, the count declined to 46,648 in 2023 and 45,245 in 2024. Despite the decline after 2022, the female count in 2024 remained 3,752 higher than the 2019 count, corresponding to an increase of approximately 9.0%. The male

proportion increased from 70.2% in 2019 to 73.5% in 2024, an increase of 3.3 percentage points. In contrast, the female proportion declined from 29.8% to 26.5%, a decrease of 3.3 percentage points. The male-to-female ratio of recorded deaths also increased, from approximately 2.35 male deaths for every female death in 2019 to 2.77 in 2024. These ratios describe the relative numbers of recorded deaths and should not be interpreted as population-based risk ratios.

Table 2: Changes in recorded suicide deaths between 2019 and 2024

Indicator	2019	2024	Absolute change	Relative change
Male deaths	97,613	125,449	+27,836	+28.5%
Female deaths	41,493	45,245	+3,752	+9.0%
Transgender deaths	17	52	+35	+205.9%
Total deaths	139,123	170,746	+31,623	+22.7%

3.3 Age distribution of recorded suicide deaths

Table 3: Age-wise distribution of recorded suicide deaths in India, 2019-2024

Age group	2019	2020	2021	2022	2023	2024
Below 18	9,613	11,396	10,732	10,205	10,785	11,184
18-29	48,774	52,718	56,543	59,108	56,170	56,495
30-44	44,287	47,998	52,054	54,351	55,731	54,932
45-59	25,436	27,814	30,163	31,921	32,945	32,099
60 and above	11,013	13,126	14,541	15,339	15,787	16,036
Total	139,123	153,052	164,033	170,924	171,418	170,746

The age-group data indicated that adults aged 18-29 and 30-44 accounted for the largest numbers of recorded deaths during the study period. In 2024, 56,495 deaths were recorded in the 18-29 age group, representing approximately 33.1% of the annual total. The 30-44 age group accounted for 54,932 deaths, or approximately 32.2%. Combined, these two groups represented about 65.3% of recorded deaths in 2024. The number of deaths among individuals aged 45-59 increased from 25,436 in 2019 to 32,099 in 2024. The number among individuals aged 60 years or older increased from 11,013 to 16,036 over the same period. The latter represents an increase of approximately 45.6%. Among individuals below 18 years, recorded deaths were 9,613 in 2019, increased to 11,396 in 2020, and stood at 11,184 in 2024.

4. Discussion

4.1 Principal Findings and National Context

This six-year analysis of recorded suicide deaths in India from 2019 to 2024 demonstrates three principal findings: a substantial increase in the annual number of recorded deaths, a progressively greater proportion of deaths among men, and a concentration of recorded deaths among adults aged 18-44 years. The total number of recorded deaths increased from 139,123 in 2019 to 170,746 in 2024, representing a 22.7% increase. However, this increase was not continuous throughout the study period. Recorded deaths declined marginally from 171,418 in 2023 to 170,746 in 2024, suggesting a recent plateau in absolute numbers rather than a sustained year-on-year increase. These findings highlight the continuing public-health significance of suicide in India, although a longer time series and population-adjusted analyses are required to determine whether the observed changes reflect underlying mortality trends [1,2].

The overall pattern is consistent with previous Indian studies documenting a substantial and geographically heterogeneous burden of suicide. Dandona et al., analyzing National Crime Records Bureau (NCRB) data from 2001 to 2010, reported that the recorded suicide rate increased from 14.9 to 15.4 per 100,000 populations, with considerable variation between states and differences in the distribution of deaths by sex, age and reported circumstances [6]. Similarly, the Global Burden of Disease (GBD) Study 2016 identified substantial state-level variation in suicide mortality, with considerable differences between men and women across Indian states [10]. These findings indicate that national aggregates, although useful for

monitoring the overall burden, may obscure important sub national differences in suicide mortality.

The present analysis extends this evidence by describing changes in recorded deaths over a more recent six-year period, including the years affected by the COVID-19 pandemic. The increase observed between 2019 and 2021 coincided with a period of major social, economic and healthcare disruption. Nevertheless, the temporal correspondence should not be interpreted as evidence that the pandemic caused the increase. The present dataset does not contain information on individual exposures, pandemic-related stressors or other determinants that would permit causal attribution. Moreover, the subsequent stabilization of annual counts suggests that suicide mortality patterns should be examined through longer-term surveillance rather than interpreted through isolated annual comparisons.

International evidence reinforces the importance of this issue. The World Health Organization (WHO) estimated that approximately 727,000 people died by suicide worldwide in 2021, with 73% of these deaths occurring in low- and middle-income countries. Suicide was also the third leading cause of death among people aged 15-29 years globally [4]. India therefore faces a major surveillance and prevention challenge within a broader global public-health problem. However, the number of deaths recorded in the present study cannot be directly compared with global estimates to infer India's relative contribution or rank because the underlying data sources, estimation procedures and completeness of ascertainment may differ.

4.2 Sex Differences in Recorded Suicide Deaths: National and International Comparisons

A prominent finding was the consistent predominance of male deaths throughout the study period. Recorded male deaths increased from 97,613 in 2019 to 125,449 in 2024, an increase of 28.5%. Female deaths increased from 41,493 to 45,245 over the same period, representing a 9.0% increase, although the female count declined after reaching 48,172 in 2022. Consequently, the male proportion of total recorded deaths increased from 70.2% to 73.5%, while the female proportion decreased from 29.8% to 26.5%. The male-to-female ratio increased from approximately 2.35 to 2.77 recorded deaths for every female death.

These findings are consistent with recent NCRB reporting. In 2023, the NCRB recorded 171,418 suicide deaths, of which

72.8% were among men and 27.2% among women [2,3]. The corresponding proportions in the present dataset were 72.8% and 27.2%, respectively, in 2023, increasing to 73.5% male and 26.5% female deaths in 2024. This consistency supports the internal coherence of the sex-disaggregated data, provided that the spreadsheet has been accurately extracted from the corresponding annual reports. The increasing male share nevertheless warrants further investigation, particularly to determine whether it reflects changes in population-adjusted mortality, differences in reporting completeness or changes in the underlying distribution of suicide deaths.

The observed male predominance is also consistent with international suicide mortality estimates. WHO estimates for 2021 indicated a global age-standardized suicide rate of 12.3 per 100,000 among males compared with 5.6 per 100,000 among females [4]. These estimates demonstrate that male suicide mortality exceeds female mortality globally. However, the comparison requires an important distinction: the present study reports the proportion and number of recorded deaths, whereas the WHO estimates are population-adjusted, age-standardised rates. The numerical ratio of recorded deaths in India should therefore not be interpreted as equivalent to the global sex-specific rate ratio.

Evidence from India also indicates that sex differences in suicide are more complex than the overall male predominance suggests. Rane and Nadkarni's systematic review found that suicide epidemiology in India differs from patterns commonly reported in high-income countries, particularly regarding the age distribution and social circumstances of deaths [5]. The subsequent scoping review by Ramesh et al. similarly identified differences in the sex distribution, associated circumstances and methods of suicide between India and high-income settings. The authors also highlighted substantial gaps in research on gender-specific risk and protective factors and on suicide among transgender populations [9].

The present findings should therefore be interpreted as evidence of a changing distribution of recorded deaths, rather than definitive evidence of an increasing sex differential in individual suicide risk. Population size, age structure, differential ascertainment and sex-specific reporting patterns may all influence the observed distribution. Arya et al. demonstrated this concern in their comparison of NCRB and GBD estimates for 2005-2015, identifying substantial potential under-enumeration, with estimated under-reporting differing by sex and age [8]. Although these estimates relate to an earlier period and should not be applied directly to the 2019-2024 data, they establish that recorded suicide deaths may not fully represent the underlying burden.

The public-health implications are consequently twofold. First, prevention strategies should address the circumstances associated with male suicide mortality, including potential barriers to help-seeking and access to appropriate mental-health services, while avoiding assumptions that these factors explain the observed increase. Second, the declining female share should not be interpreted as evidence that suicide among

women is becoming less important. The absolute number of recorded female deaths remained higher in 2024 than in 2019, and differential under-reporting may distort comparisons. Sex-disaggregated surveillance, supplemented by age-specific rates and qualitative research, is necessary to identify the distinct circumstances and support needs of different population groups.

4.3 Age Distribution and the Concentration of Deaths Among Working-Age Adults

The age distribution showed that adults aged 18-29 and 30-44 years accounted for the largest numbers of recorded deaths during the study period. In 2024, the 18-29-year age group accounted for 56,495 deaths (33.1%), while the 30-44-year group accounted for 54,932 deaths (32.2%). Combined, these groups represented approximately 65.3% of recorded deaths. This concentration indicates that suicide prevention must remain a priority across young adulthood and middle age, rather than being restricted to a single age group.

The findings broadly align with international evidence identifying suicide as an important cause of premature mortality among young people. WHO estimates indicate that suicide was the third leading cause of death among people aged 15-29 years globally in 2021 [4]. Indian evidence similarly identifies substantial suicide mortality among younger populations, although the magnitude and distribution vary according to the data source, age categorization and geographical setting. Rane and Nadkarni reported that suicide rates were particularly high among people aged 20-29 years in several Indian studies [5]. The GBD Study 2016 also identified a substantial concentration of suicide deaths among younger people, with 71.2% of female deaths and 57.7% of male deaths occurring among those aged 15-39 years [10].

These comparisons support the importance of early and sustained prevention across the life course. However, the age categories used in the present study do not correspond exactly to those used in the cited studies. Furthermore, the present analysis describes counts rather than age-specific rates. It therefore cannot establish whether people aged 18-44 years experienced a higher individual risk of suicide than other age groups or whether their greater contribution partly reflects the size of the population in these age categories.

An additional finding was the increase in recorded deaths among people aged 60 years or older, from 11,013 in 2019 to 16,036 in 2024, representing an increase of approximately 45.6%. This was the largest relative increase among the age groups examined. Although the absolute number of deaths in this group remained lower than in younger and middle-aged adults, the magnitude of the increase merits specific investigation. Potential areas for further research include social isolation, bereavement, chronic illness, financial insecurity and access to mental-health and social-support services. These factors should be treated as hypotheses for investigation rather than explanations established by the current dataset.

Age-related findings also require consideration of surveillance quality. Arya et al. found evidence of greater potential under-enumeration in younger and older age groups than in middle-aged populations in the NCRB data examined for 2005-2015 [8]. Accordingly, the observed increase among older adults may reflect changes in underlying mortality, reporting completeness, demographic composition or a combination of factors. Age-specific population denominators and comparable mortality estimates are needed to distinguish these possibilities.

The number of deaths among individuals below 18 years also remained substantial, increasing from 9,613 in 2019 to 11,184 in 2024, despite fluctuations between years. This finding reinforces the importance of age-appropriate prevention, early recognition of distress and accessible support through families, educational institutions, healthcare services and community organizations. However, the aggregate data cannot identify the circumstances preceding these deaths or determine which prevention approaches would be most effective for this group.

4.4 Implications for Suicide Prevention and Public-Health Policy

The findings support a comprehensive, evidence-informed approach to suicide prevention that integrates surveillance, mental-health services, community engagement and interventions addressing relevant social and environmental determinants. WHO's LIVE LIFE implementation guide identifies four key interventions: limiting access to means of suicide, promoting responsible media reporting, developing socio-emotional life skills among young people, and early identification and support for people affected by suicidal behavior [11]. These measures provide an established international framework for strengthening national and local prevention strategies.

For India, the results suggest that prevention planning should prioritize populations and settings identified through reliable local surveillance, while recognizing that national counts alone cannot determine the distribution of individual risk. The concentration of recorded deaths among adults aged 18-44 years supports accessible support through workplaces, primary healthcare facilities, educational institutions and community services. The increase in recorded deaths among older adults also warrants attention to the availability and accessibility of appropriate social and mental-health support.

At the same time, prevention strategies should avoid treating sex or age as sufficient indicators of an individual's risk. The observed male predominance and substantial burden among younger and middle-aged adults can guide population-level planning, but identifying the determinants of suicide requires more detailed evidence on socioeconomic circumstances, mental-health conditions, previous suicidal behavior, access to services and other relevant exposures. The absence of these variables in the present dataset limits the extent to which

specific interventions can be recommended on the basis of these results alone.

A further priority is strengthening suicide surveillance. The documented limitations of NCRB data underscore the need to improve the completeness, consistency and timeliness of mortality reporting and to triangulate administrative records with other appropriate sources of mortality information [6,8]. Future analyses should incorporate sex-specific and age-specific population denominators, age-standardized rates, state-level disaggregation and longer time series. Where data permit, comparisons with WHO or GBD estimates could help assess the robustness of observed patterns, provided that differences in estimation methods and data definitions are explicitly acknowledged.

These measures would support more defensible assessments of changes in suicide mortality and enable prevention programmers to be evaluated against measurable outcomes. Such an approach is consistent with WHO's emphasis on surveillance, multisectoral collaboration, capacity building and monitoring as foundational components of effective suicide prevention [11].

4.5 Strengths and Limitations

An important strength of this study is its examination of six consecutive calendar years, enabling a consistent description of changes in recorded suicide deaths by sex and age. The analysis distinguishes absolute changes in counts from changes in the proportion of deaths, thereby providing a clearer description of how the recorded burden was distributed over time. The inclusion of both sex-specific and age-group data also identifies populations and temporal patterns that merit further investigation.

Several limitations, however, should be considered. First, the analysis is descriptive and based on aggregate administrative data. It does not permit causal inference or identification of the individual-level determinants of suicide. Second, the use of counts rather than population-based rates limits comparisons across sex and age groups because differences in population size and demographic structure are not accounted for. Third, the absence of a sex-by-age cross-tabulation prevents examination of whether age-specific patterns differ between men and women.

Fourth, the completeness of NCRB reporting is a significant consideration. Previous comparisons of NCRB and GBD estimates have identified potential under-enumeration that varies by sex, age and state [8]. Consequently, the observed patterns should be interpreted as trends in recorded deaths rather than definitive estimates of the underlying mortality burden. Fifth, the analysis does not incorporate state-level differences, socioeconomic circumstances, mental-health conditions or other potential determinants, limiting its ability to explain the observed changes.

Finally, the study covers only six years and cannot establish whether the recent stabilisation in recorded deaths represents a sustained change. Comparisons with national and international studies must also account for differences in case ascertainment, age categories, reference periods and statistical methods. These limitations do not negate the descriptive value of the findings, but they underscore the need for more comprehensive surveillance and population-adjusted analyses.

4.6 Future Research Directions

Future research should move beyond national aggregate counts towards analyses that combine demographic, geographical and socioeconomic information. First, sex-specific and age-specific suicide mortality rates should be calculated using appropriate population denominators, with age standardization where relevant. Second, longer time-series analyses should examine whether the increase observed between 2019 and 2021 and the subsequent stabilization reflect sustained trends, temporary fluctuations or changes in reporting. Third, state-level analyses could identify geographical heterogeneity that is obscured by national averages.

Fourth, comparisons between NCRB records and alternative mortality estimates should be undertaken to assess the potential influence of under-reporting and classification differences. Finally, mixed-methods and longitudinal research could investigate the social, psychological, economic and service-related circumstances associated with suicide across different population groups. Such research would help translate descriptive surveillance findings into locally appropriate, evidence-based prevention strategies.

5. Conclusion

The analysis of recorded suicide deaths in India from 2019 to 2024 demonstrates a substantial increase in the annual number of deaths, a growing male share of recorded deaths and a concentration of the burden among adults aged 18-44 years. The increase in deaths among people aged 60 years or older also warrants further investigation. These patterns are broadly consistent with national and international evidence identifying suicide as a major public-health challenge, while highlighting the importance of interpreting administrative data cautiously.

The findings support strengthened suicide surveillance, population-adjusted mortality analyses and prevention strategies responsive to the needs of different population groups. However, the observed changes in recorded counts should not be equated with changes in individual-level risk or attributed to specific causes without additional evidence. Improved data completeness, longer time series and more detailed epidemiological research are essential to establish the underlying trends and guide effective suicide prevention in India.

6. Strengths of the Study

An important strength of this study is the use of a consistent six-year period to compare annual recorded deaths. The analysis presents male and female counts alongside their proportions and includes an age-wise description of the overall burden. The study also distinguishes descriptive changes in recorded deaths from individual-level suicide risk. This is important because aggregate administrative data can identify patterns but cannot independently establish the reasons for those patterns.

7. Limitations

Several limitations should be considered when interpreting the results.

First, the analysis relied on aggregate data provided in a spreadsheet. The original reports and data extraction procedures must be verified to ensure accuracy and consistency across years.

Second, the analysis used counts rather than sex-specific or age-specific population-based rates. Consequently, it cannot quantify differences in individual-level suicide risk.

Third, the data did not provide a cross-tabulation of sex and age. The age distribution therefore cannot establish whether a particular age group contributed disproportionately to male or female deaths.

Fourth, the analysis did not include information on mental health conditions, socioeconomic circumstances, occupation, marital status, location, or other potential determinants. It cannot explain why deaths occurred or establish causal associations.

Fifth, the findings depend on the completeness and classification of recorded deaths. As with other administrative mortality data, under-reporting and misclassification may affect the observed figures.

Finally, the six-year period provides a useful description of recent changes but is insufficient on its own to establish long-term trends or the effectiveness of particular prevention interventions.

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Conflict of Interest

The author should declare any relevant competing interests before submission. If none exist, the manuscript may state: "The author declares no conflict of interest."

Data Availability

The aggregate data analyzed in this study were provided in an Excel spreadsheet. The original source reports and any applicable public data links should be cited in the final manuscript.

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