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Research Article

Exploring Trends: Five-Year Analysis of Suicide Rates in Nepal

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Background: Suicide is a global, preventable public health issue, with nearly more than 700,000 people dying by suicide annually. The majority of suicides occur in developing countries, including Nepal. This study is aimed at examining the trends and patterns of suicide in Nepal over the past 5 years in the federal context.

Methods: Using the Nepal Police suicide database, we analyzed data from 2019 to 2023 based on age, gender, methods of suicide, and provincial distribution. Trends in suicide rates over the past 5 years were examined, with graphs and tables created to represent the observed trends and patterns visually. Excel was used to support the data analysis.

Results: Overall, the suicide rate was found to be higher among males (59.1%). However, the suicide rate varied by gender and age group, with females having a higher suicide rate below 18 years of age, while males had a higher suicide rate above 18 years of age. Hanging has consistently been the preferred method of suicide over the past 5 years. The national suicide rate showed an increasing trend. Similarly, an increasing trend in suicide was observed in all seven provinces of Nepal, with Koshi, Madhesh, and Gandaki provinces showing significant growth over the past 5 years.

Conclusion: The increasing trend in suicide rates at both the national and provincial levels highlight the necessity to prioritize this issue and it is imperative for all levels of government to formulate targeted policies, programs, and strategies to prevent suicide.

1. Introduction

Suicide is a significant global health issue affecting individuals from early adolescence to old age [1, 2]. According to WHO, more than 700,000 people die by suicide in 2019, with an estimated 20 suicide attempts for each death [3]. The global age-standardized suicide rate was 9.0 per 100,000 population for 2019. Rates varied between countries from fewer than two deaths by suicide per 100,000 to over 80 per 100,000 [4]. Suicide profoundly impacts families, communities, and entire countries, leaving long-lasting effects on those left behind [1, 5]. It is estimated that for every suicide, approximately 135 people are affected [6]. Over a lifetime, about 21% of people will experience the suicide of a relative, friend, or acquaintance [2].

In 2019, over 77% of global suicides occurred in low- and middle-income countries [1]. The suicide rate in the Southeast Asia region (10.2 per 100,000) exceeds the global average (9.0 per 100,000), with a notably higher female age-standardized suicide rate (8.1 per 100,000) compared to the global female average (5.4 per 100,000) [4]. Pesticide self-poisoning, particularly in rural agricultural areas, accounts for approximately 20% of global suicides, with other common methods including hanging and firearms [1]. Within the Southeast Asian region, India and Sri Lanka have the highest suicide rates of 12.9 per 100,000 [4].

In Nepal, nearly 80% of individuals needing mental healthcare do not receive it, according to a 2020 National Mental Health Survey [7, 8]. Data from the Nepal Police indicate an average annual increase in suicides of 7.2% over

the past 5 years, surging to 14% in 2021 [7]. The age-standardized suicide rate in Nepal was 9.8 per 100,000 in 2019, trailing only after India and Sri Lanka in the region [4]. Recently, the suicide rate among Nepali women aged 15–45 years was found to be 28 per 100,000, making suicide the leading cause of death in this demographic, accounting for 16% of mortality [9].

Suicide is the leading cause of unnatural death in Nepal, and valid data on suicide and its patterns are difficult to obtain and often underestimated due to sociocultural and legal issues. Additionally, reliable data are hampered by incomplete surveillance systems [9, 10]. Apart from the Nepal Police database, there is no reliable source for recording suicide-related data. The documentation of suicide cases in Nepal involves a complex process, as these cases are treated as both legal and health matters, requiring coordination between the health, legal, and administrative systems, along with cooperation from families and informants. Consequently, some suicide cases may go unrecorded [11, 12].

While the Nepal Police record data on suicide, there is no proper analysis of these data according to different provinces. The data are crucial for achieving the national targets and UN Sustainable Development Goal 3.4.2, which focuses on reducing premature mortality from noncommunicable diseases, including suicide [13, 14]. Additionally, this analysis will contribute to generating evidence for decision-makers regarding the prevention and control of suicide at both federal and provincial levels. Therefore, this study examines the trends and patterns of methods of suicide in Nepal over the past 5 years in the federal context.

2. Methodology

The data source for this study was the Nepal Police database, which contains comprehensive records of all reported suicide cases in Nepal. The study focuses on data collected from January 1, 2019, to December 31, 2023. Permission was obtained from the Nepal Police to use their suicide records for this research. The data were analyzed based on gender, age, methods of suicide, and provincial distribution. The collected information was entered into Excel for statistical analysis. Trends in suicide rates over the past 5 years were analyzed, with graphs and tables created to represent the observed trends and patterns visually. Since the secondary data were obtained from the Nepal Police and did not involve direct or indirect contact with human or animal subjects, ethical clearance from the institute was not taken.

3. Results

Table 1 shows the gender and age distribution of suicide cases in Nepal over the last 5 years, during which 33,000 cases were recorded. Among the cases, it shows male dominance over females, with three out of five (59.1%) were male cases. In terms of age, the majority of suicides (89.85%) occurred in individuals above 18 years old. Similarly, in the age and gender distribution, a higher proportion of suicides

TABLE 1: Gender and age distribution of suicide in Nepal.

Variables	Category	Number	Percentage	
Gender	Male	19,513	59.1	
	Female	13,487	40.9	
Age	Less than 18 years	Male	1,254	37.1
		Female	2,134	62.9
	18 years and above	Male	29,612	89.8
		Female	18,259	61.6
		Male	11,353	38.4
		Female		

Note: $N = 33,000$. Data source: Nepal Police record, 2019–2023.

among females (63%) occurred in those under 18 years. Conversely, among those aged above 18 years, male constituted 61.66% of the cases.

4. Methods of Suicides

Table 2 presents the various methods employed by suicide victims. Over the years, hanging has managed to consistently emerge as the most common method of suicide, as evidenced by its steadily increasing frequency. In 2019, hanging accounted for 74.81% of all suicides in Nepal, making it the most common method of suicide that year. This method became increasingly popular throughout the years. By 2023, hanging accounted for an even larger share, accounting for 85.17% of all suicides in the country. Over 5 years, there was a significant increase in the usage of hanging as a method of suicide. Following hanging, poison eating was the second most prevalent form of suicide in Nepal, accounting for about 23.10% of all suicide deaths in the year 2019. However, the prevalence of this method has dropped over time. By 2023, the proportion of suicides caused by poison use had declined to 13.33% among all suicide deaths. Less common methods of suicide, like immolation, electrocution, instrumental suicide, falling from heights, and drowning, all contribute to suicide deaths in Nepal. Among them, the prevalence of immolation, in particular, has declined over the years. It contributed to 0.41% of the total deaths in 2019 but decreased to 0.09% in 2023. Moreover, the prevalence of other methods remained relatively stable over the years. Despite their lower frequency, these methods continue to be part of the overall suicide statistics in the country.

5. The Trend of Suicidal Rate

Figure 1 displays the rising trend of suicide rate in Nepal. The steady growth rates have been observed in 5 years, reflecting a concerning condition of suicidal and self-harming behaviors and practices in the country. In 2019, the country experienced a suicide rate of 19.67 per 100,000 population, which went up to 23.56 per 100,000 population in 2023, indicating upward growth in suicidal incidents.

TABLE 2: Various methods for suicides in Nepal.

S.N.	Methods of suicide	2019 (n, %)	2020 (n, %)	2021 (n, %)	2022 (n, %)	2023 (n, %)
1	Hanging	4,327 (74.81)	5,039 (80.38)	5,731 (80.44)	5,684 (83.22)	5,956 (85.17)
2	Poisoning (ingestion of a toxic substance)	1336 (23.10)	1146 (18.28)	1286 (18.05)	1040 (15.23)	932 (13.33)
3	Immolation (fatal burns)	24 (0.41)	10 (0.16)	15 (0.21)	14 (0.20)	6 (0.09)
4	Suicide by instrument (sharp/blunt)	15 (0.26)	22 (0.35)	14 (0.20)	17 (0.25)	15 (0.21)
5	Death by fall	48 (0.83)	34 (0.54)	44 (0.62)	42 (0.61)	49 (0.70)
6	Electrocution	4 (0.07)	1 (0.02)	0 (0)	0 (0)	0 (0)
7	Drowning	30 (0.52)	17 (0.27)	35 (0.49)	33 (0.48)	35 (0.50)
Total		5,784	6,269	7,125	6,830	6,993

Note: $N = 33,000$. Data source: Nepal Police record, 2019–2023.

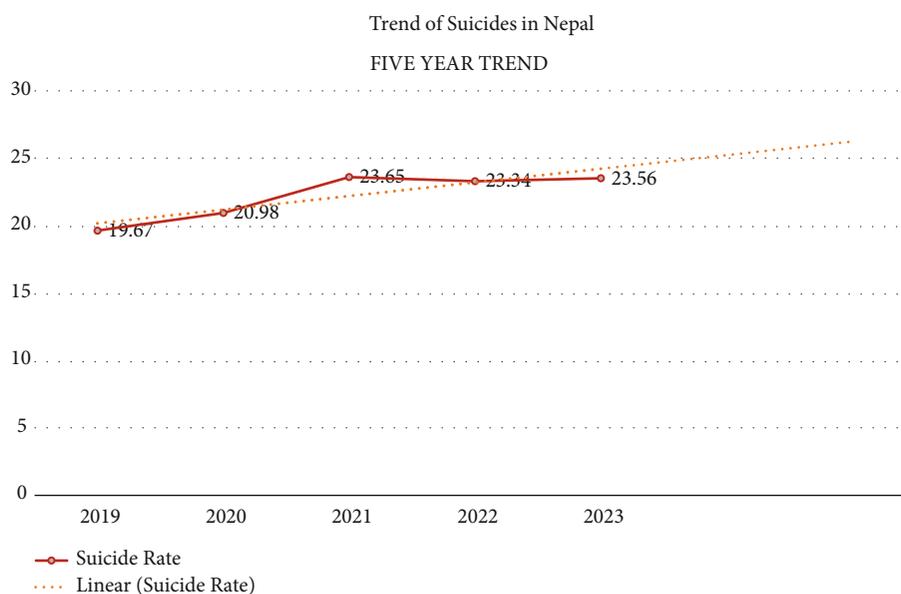


FIGURE 1: Five-year trend of suicide in Nepal.

6. Province-Wise Distribution of Suicide Rates

Figure 2 illustrates the trend of suicide rates among the seven provinces and at the national level in Nepal. Analysis of 5-year data (2019–2023) indicates an increasing trend in suicide rates across all provinces. Comparing the rates from 2019 to 2023, it was found that all seven provinces experienced growth in suicide rates, with Koshi (25.36 to 30.72), Madhesh (11.58 to 17.94), and Gandaki provinces (25.12 to 28.73) showing significant increases. The remaining four provinces also saw moderate yet consistent growth during the same period. At the national level, there was a notable increase in the suicide rate, with an almost 4% rise over 5 years. The graph also shows a significant spike in 2021, which may be attributed to the COVID-19 pandemic.

7. Discussion

Based on the analysis of police data from the past 5 years (2019–2023), the suicide rate in Nepal has been on an increasing trend, highlighting the emergence of suicide as a

serious public health problem. However, the lack of a proper recording and surveillance system has resulted in limited evidence of suicides in Nepal. This study contributes to the existing sparse literature by analyzing Nepal police records over the last 5 years.

Regarding the trend of suicide rates in Nepal, there has been a steep increase over the years. The data reveals a concerning rise in the number of suicides each year, from 19.67 per 100,000 in 2019 to 23.56 per 100,000 in 2023. WHO's 2019 global report on suicide also indicated that Nepal had the third-highest suicide rate among Southeast Asian countries [4]. The Southeast Asian region, accounting for 26% of the world's population, has the highest regional suicide rate of 17.7 per 100,000 [15]. This significant rise in the suicide trend calls for urgent attention to address the underlying causes and implement effective prevention strategies [16].

In our study, the proportion of suicide cases was significantly higher among the male population compared to females across all age groups. These findings are consistent with other studies in Nepal, which have shown a higher burden of suicide among males [17, 18]. However, this trend

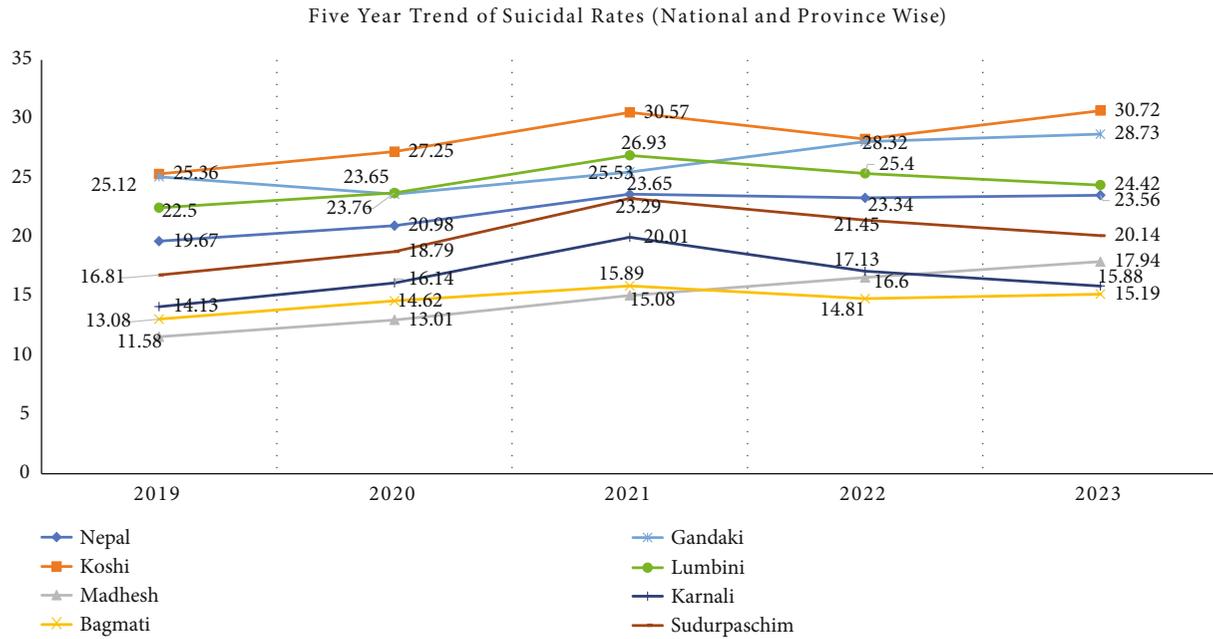


FIGURE 2: Province-wise distribution of suicidal rates.

reverses when examining suicide cases among minors. In this younger demographic, females exhibit a considerably higher proportion of suicide cases compared to their male counterparts, a pattern that has been similarly observed in other research focused on suicide in Nepal [19]. Another study conducted in the USA among 10- to 19-year-olds shows that suicide rates among girls have been rapidly increasing since 2007, with rates increasing by 12.7% per year compared to 7.1% for boys [20]. Similarly, a study conducted in neighboring India shows higher rates of suicide among teenage girls [21]. This contrast highlights a critical and concerning issue, indicating that young females are more vulnerable to suicide. Young females in Nepal often face significant gender-based violence and discrimination, including domestic violence, sexual abuse, and harassment. Additionally, Nepali society places substantial cultural and social expectations on females, including early marriage, pressure to conform to traditional roles, and limited freedom and opportunities for education and career advancement. These experiences can lead to severe emotional and psychological distress, contributing to higher suicide rates among young women [22].

The analyzed data showed that hanging was the most preferred method of suicide. This finding is similar to the study conducted in Switzerland, where 19.7% preferred suicide by hanging [23]. Hanging requires minimal resources and is often readily accessible, making it a convenient option for individuals in distress. Poisoning was the second preferred method of suicide in Nepal, though its prevalence has been decreasing over the years. A study conducted in Poland also shows that poisoning accounts for 2.1% of the total registered suicides [24]. Similar findings were reported from a 2001 study in Nepal, which noted that 70% of completed suicides were by hanging, 18% by poisoning, and 12% by drowning, burning, or stabbing [25]. A study con-

ducted in the Southeast Asian region reported similar findings, where hanging followed by poisoning are two of the most common suicide methods in Bangladesh, India, and Pakistan while in Sri Lanka, poisoning was the preferred method over hanging [26].

Our study displayed the 5-year trend of suicide rates in Nepal from 2019 to 2023, both nationally and by province. The national suicide rate showed a sharp increase, peaking in 2023. Among the provinces, Koshi consistently had higher suicide rates, while Gandaki showed a steady increase over the years. Madhesh and Bagmati have lower suicide rates, but both provinces saw an overall increase over the 5 years. Bagmati and Lumbini exhibit relatively lower and stable rates, which could be attributed to better access to healthcare and mental health services, higher literacy rates, and more robust economic conditions. Karnali and Sudurpashchim showed a declining trend after peaking during the pandemic period. The higher increase in the suicide rate during the pandemic period might be due to the high poverty rate and low human development index in these provinces, which are also shown to have a positive association with suicide [27, 28].

Despite efforts to improve mental health awareness and access to services, the data indicates a consistent increase in suicide rates, highlighting significant gaps in the country's mental health infrastructure and support systems. Contributing factors include widespread poverty, unemployment, social stigma surrounding mental health issues, and inadequate healthcare services [29, 30]. Moreover, the recent COVID-19 pandemic has exacerbated these challenges, intensifying stress, anxiety, and depression. A study conducted in Nepal during the pandemic revealed an overall increase in the monthly suicide rate, with an average rise of 0.28 suicides per 100,000 people during the pandemic months [17]. Similarly, another study conducted in an

emergency department of a teaching hospital in Nepal shows an increase in suicide and self-harm cases during the initial phase of the COVID-19 pandemic [31].

The study of suicide trends in Nepal relies heavily on the accuracy and completeness of records maintained by the Nepal Police. Any underreporting or misclassification in these original records could significantly affect the study's findings, leading to potential biases or inaccuracies in the reported suicide rates. Additionally, the study may not fully capture long-term trends in suicide rates and methods, limiting its ability to provide a comprehensive overview of how these factors have evolved. However, it provides essential insights into the national and provincial trends of suicide and methods for suicides. These data could be helpful at both the national and provincial levels to sensitize and conduct further studies. Similarly, it supports the development and implementation of appropriate prevention strategies.

8. Conclusion

In conclusion, the rising suicide rate among females under 19 years is a serious concern that demands prompt attention from stakeholders at both the national and provincial levels. Additionally, the increase in suicide rates across all provinces of Nepal highlights the urgent need for provincial authorities to address this issue by formulating targeted policies and prevention strategies. Furthermore, this study underscores the necessity for robust data collection and continuous monitoring of suicide data at both the national and provincial levels to develop evidence-based policies and interventions.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

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