

Examining Suicide Trends and Psychosocial Correlations in Georgia: An Epidemiological Analysis from 2017 to 2022

Nikoloz Zhgenti¹, Lasha Kiladze²

¹Faculty of Medicine, Ivane Javakishvili Tbilisi State University, Tbilisi, Georgia

²Center for Mental Health and Prevention of Addiction, Tbilisi, Georgia

Email: nikoloz.zhgenti395@med.tsu.edu.ge

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Abstract

Background: Suicide is a pressing issue globally, particularly among young people, and is a significant concern in low- and middle-income countries. A prior study by Kiladze and colleagues highlighted a surge in suicide rates in Georgia between 2011 and 2014. Additionally, studies have shown that suicide risk may be exacerbated by an array of psychiatric and socio-environmental factors. **Aim:** The study aims to uncover suicide trends in Georgia and understand their associations with different mental health and social conditions. **Methods:** Based on the data sourced from various government agencies, the study analyzed suicide and suicide attempt cases, mental health data, relative poverty rates, and domestic violence incidents. To assess statistical significance, the t-test and Pearson coefficient were used to calculate p-values. **Results:** The findings revealed a stark 53.68% increase in suicides from 2017 to 2022. Men were more prone to suicide, and their attempts were more often fatal. Suicide rates among individuals under 18 were significantly high and correlated with behavioral and emotional disorders. Substance use disorders have a strong link to suicide among men. Domestic violence, especially sexual violence, played a disturbing role in this surge. **Conclusion:** In Georgia, suicides surged significantly, contrasting the mere two percent increase in the United States. This can be linked to mental health issues, notably Substance Use Disorder in men, and behavioral disorders in those under 18. Domestic violence, which had a pronounced increase, also contributed. Despite data limitations, our study underscores these concerns, emphasizing the need for further analysis.

Keywords

Suicide Trends, Suicide Attempts, Domestic Violence, Social Condition,

1. Introduction

According to the Centers for Disease Control and Prevention (CDC), suicide rates increased by approximately 36% between 2000 and 2021 (CDC, n.d. <https://www.cdc.gov/suicide>). As per the World Health Organization (WHO), more than 700,000 people die by suicide annually (Ilic & Ilic, 2022). In light of this, it is evident that suicide is a pressing issue in our current era. The most recent study on this issue in Georgia, by Kiladze and others (Kiladze et al., 2016), revealed that the suicide rate increased along with the rest of the world between 2011 and 2014. It is necessary to notice that both mental health and social background are related to the risk of suicide. Accordingly, we attempted to assess the suicide trend and find some correlations with epidemiological data on mental illness and social conditions in Georgia from 2017 to 2022.

1.1. Suicide and Mental Health

Based on the National Violent Death Reporting System, Deborah M. Stone et al. showed that 46% of suicide victims had a history of mental illness (Stone et al., 2018). Furthermore, bipolar disorder, depression, and schizophrenia are the most prevalent of these conditions (Nordentoft et al., 2011). According to some studies, a mental disorder was found in 87.3% of the 3275 suicide cases (Arsenault-Lapierre et al., 2004). Nock et al. found that mental disorders, particularly mood disorders, were strongly associated with suicidal ideation and attempts (Nock et al., 2013). Additional research has investigated that mental disorders and comorbidity strongly predict suicide behavior in young people (12 - 26 years). These studies found that young individuals with mental disorders had a significantly higher risk of suicide compared to the general population (Gili et al., 2019). However, it is essential to acknowledge that some authors have explored alternative perspectives. For example, Mortier et al. analyzed the association between mental disorders and suicidal behavior among college students. They demonstrated that while mental disorders were linked with suicidal ideation, they were not consistently related to suicide attempts (Mortier et al., 2018). It is important to note that mental illness is just one of several factors that can contribute to suicide, and each case is unique.

1.2. Suicide and Social Condition

Another important factor influencing the risk of suicide is socioeconomic condition (SEC). Most studies indicate that a higher risk of suicide is linked to lower levels of SEC. Näher and co-authors illustrated that with each percentage point increase in income, district suicide rates drop by 0.39 percent, assuming average district proportions of singles, people in one-person households, and people who

moved within the year before suicide (Näher et al., 2020). Job has proven to be an essential factor influencing the risk of suicide. Researchers from the Australian National University's Centre for Social Research and Methods (CSRSM) show that the longer a person is unemployed, the higher the chances of suicide (Biddle et al., 2022). One of the most meaningful issues that can affect and increase the risk of suicide is family abuse. Abusive family members can inflict emotional and physical trauma that can lead to feelings of hopelessness, isolation, and despair. For instance, the study, which utilized data from the Adverse Childhood Experiences (ACE) (around 17,000 participants), shows a strong association between childhood abuse, household dysfunction, and an increased risk of attempted suicide. The study demonstrated that individuals who experienced adverse childhood experiences, such as physical or emotional abuse, neglect, or household dysfunction (e.g., substance abuse, or domestic violence), were more likely to attempt suicide later in life (Dube et al., 2001). The findings of the other research, which also explores the adverse behavioral and emotional outcomes associated with child abuse and exposure to witnessed violence, demonstrate that children who experience child abuse or witness violence are at a heightened risk for adverse behavioral and emotional outcomes. The study considered different types of abuse, including physical, sexual, and emotional abuse, as well as exposure to domestic violence (Johnson et al., 2002). While it's tough to cover all the social factors that affect suicide risk, this study will make an effort to address and analyze as many as possible.

2. Methodology

First, we decided to examine every suicide and suicide attempt case in Georgia from 2017 to 2022. Lists from the Georgian Ministry of Internal Affairs' annual reports were used (police.ge). Afterward, we decided to contrast them with epidemiological information on the mental health of the country's population. We analyzed the annual reports of the National Center for Disease Control and Public Health of Georgia (ncdc.ge) and focused on five specific data points: 1) the total number of mental illness cases; 2) cases of schizophrenia, schizotypal, and delusional disorders; 3) cases of mood (affective) disorders; 4) cases of mental and behavioral disorders due to psychoactive substance use; and 5) cases of behavioral and emotional disorders beginning in children and adolescents. In addition, we examined the relationship between suicide rates and population-wide social conditions. We looked into the two, in our opinion, most crucial factors: 1) the Relative Poverty Rate (share of population under 40 percent of the median consumption); and 2) domestic violence in the country. For this purpose, Geostat's statistical data on the relative poverty rate, in conjunction with data from the Ministry of Internal Affairs of Georgia concerning domestic violence, were employed, covering incidents of physical, psychological, and sexual violence (according to restraining orders). The databases mentioned above encompass all officially registered information about the country. Psychosocial study criteria

were selected based on the high likelihood of a correlation with suicide. The research is based on publicly available government databases that are fully anonymized and accessible online via their respective websites. In several instances, data for 2022 was unavailable, and we had to estimate these parameters using data from 2017 to 2021.

2.1. Statistical Analysis

To assess the statistical significance of the data, we employed a t-test to calculate p-values. Statistical significance was determined if the p-value was less than 0.05, denoting a noteworthy difference. Furthermore, in order to elucidate the correlation between suicide rates and psychosocial factors, we utilized Pearson's correlation coefficient, computing corresponding p-values, to provide a comprehensive analysis of the relationships in our study.

2.2. Ethical Aspects

Since individuals did not directly participate in the study and the data were sourced from government agencies, ensuring complete anonymity, no special permission in the form of an ethical commission document was necessary. The data was retrospectively obtained, with information spanning from 2017 to 2022 being made available to us in 2023. This article does not contain any studies with human or animal subjects performed by the authors.

3. Results

A review of the Ministry of Internal Affairs data revealed a significant 53.68% increase in suicides between 2017 and 2021 ($p < 0.0001$). However, compared to 2021, there were 30.35% fewer cases in 2022, which was not deemed statistically significant. Despite this, in contrast to 2017, there were 7.05% more suicides or suicide attempts in 2022, p -value < 0.0001 (**Figure 1(a)**). Similar to previous years, men committed more suicides than women (Kiladze et al., 2016); from 2017 to 2022, this ratio is approximately 2.5 (**Figure 1(b)**). Another crucial difference is that men's suicide attempts tend to result in completion more often than women's. It should be noted that, of the total number of attempts, 57.1% for men and only 28.2% for women ended fatally (**Figure 1(c)**, **Figure 1(d)**). Furthermore, it's worth noting that from 2017 to 2020, there was a significant rise in total female cases. Conversely, there was a significant decrease in this group from 2020 to 2022 (**Figure 1(c)**). As for men, during the period 2017-2021, the number increased significantly (by approximately 45%), in contrast to the decrease observed for 2021-2022) (**Figure 1(d)**).

We selected and analyzed four age groups: 1) < 18 years; 2) $\geq 18 < 25$; 3) $\geq 25 < 50$; and 4) ≥ 50 (**Figure 2**). The data revealed that all age groups experienced a total increase in suicides and suicide attempts in 2017-2018, with an average rise of 38.78%. The highest increase, 69.44%, was observed in the " < 18 " age group. In general, over these six years, the highest number of suicides or suicide attempts

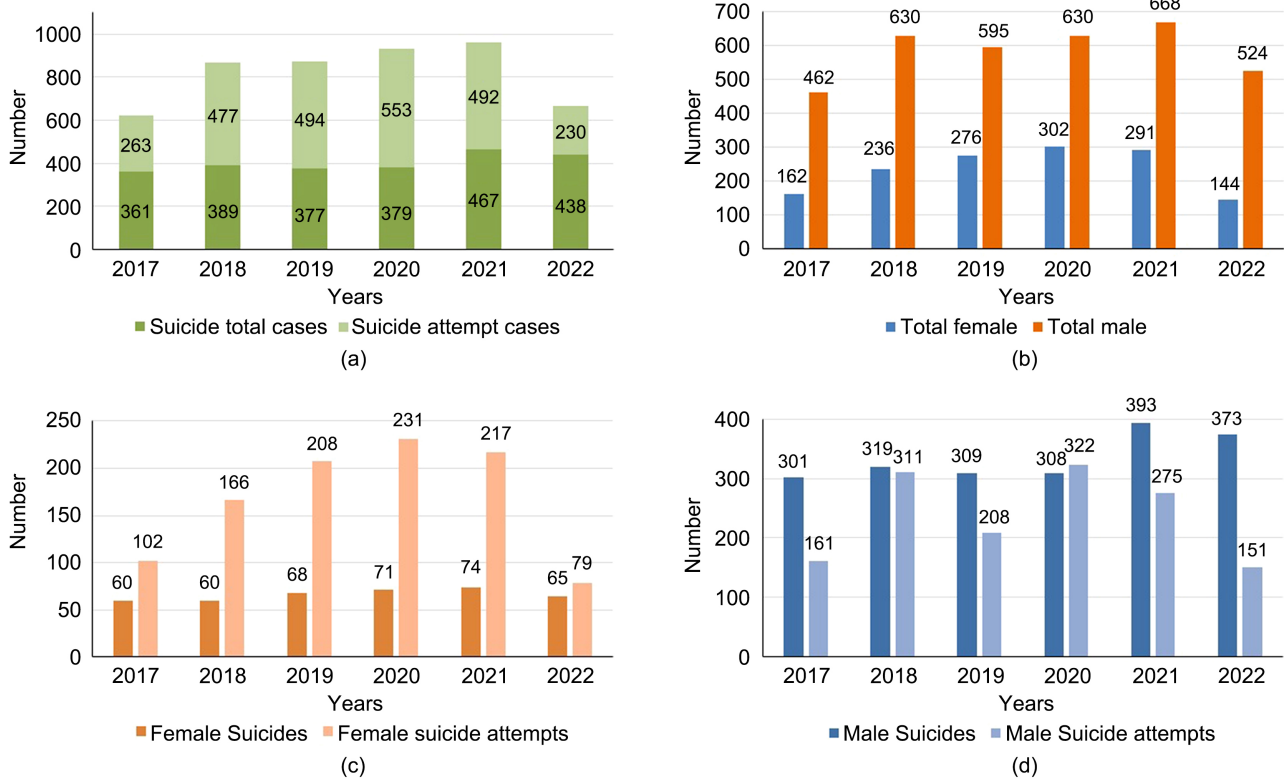


Figure 1. (a) Suicide and suicide attempt cases by years; (b) Total female and male cases; (c) Female suicide and suicide attempt cases; (d) Male suicide and suicide attempt cases.

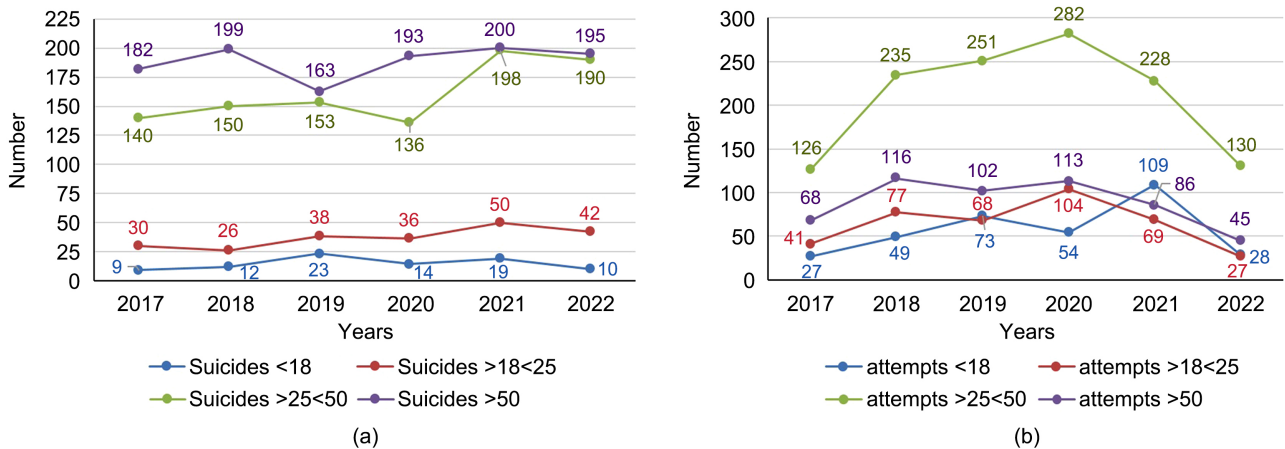


Figure 2. (a) Suicide cases and (b) Suicide attempts by age.

were committed by people aged 25 to 50, averaging approximately 45%. Although the overall trend remained consistent, there were changes observed in certain groups. For instance, in 2019, suicides decreased by 15.9% in the “≥50” age group. Similarly, in 2020, there was a 29.2% decrease in the “<18” age group. Furthermore, in 2021, there were decreases of 15% and 6.5% in the “18 - 25” and “≥50” age groups, respectively. Regarding 2022, despite a decrease in the number of suicides compared to 2021, there was still a 7.05% increase compared to 2017.

3.1. Suicide and Mental Health

In 2018, the number of mental illnesses at the end of the year was 13.66% lower compared to 2017. However, in the following years, it steadily increased, reaching its peak in 2021 with 84,142 cases, 9.97% higher than the number recorded in 2018. Regarding new cases, there was growth from 2017 to 2019, with a significant increase of 9.15% ($p < 0.001$). However, from 2019 to 2021, there was a decrease of around 16% ($p < 0.05$). In our study of four disorders, the highest percentage, accounting for 18.36% of the new annual cases, were related to schizophrenia, schizotypal, and delusional disorders. Cases of schizophrenia, schizotypal, and delusional disorders continued to grow until 2019, reaching a total of 1261 cases, which represents an increase of 41.84% ($p < 0.05$). However, from 2019 to 2021, there was a decrease of 29.03% ($p < 0.05$). The number of mental and behavioral disorders due to psychoactive substance use, as well as behavioral and emotional disorders in children and adolescents, was also growing. In 2021, these disorders were approximately 32% and 28% higher, respectively, compared to 2017 ($p < 0.0001$). As for affective disorders, their number has, on the contrary, decreased by 15.7% in 2021 compared to 2017 (**Figure 3(a)**). We separately compared the incidence of behavioral and emotional disorders in children and adolescents and suicide cases in the <18 age group (**Figure 3(b)**). Despite the fact that the findings indicate that there is no clear correlation between substantial changes in the total number of new cases of mental disorders and significant changes in the suicide rate, two key observations emerge: 1) The increase in cases of mental and behavioral disorders linked to psychoactive substance use demonstrates a significant correlation with the rise in suicide cases or suicide attempts in men ($p < 0.01$), and 2) the incidence of suicides and suicide attempts among individuals under 18 years of age significantly correlates with behavioral and emotional disorders that begin during childhood and adolescence ($p < 0.05$). Some correlation is observed between schizophrenia, schizotypal, and delusional disorders and suicide behavior, but there is no significant connection between them. Unlike the previously mentioned disorders, mood disorders do not exhibit any correlation with suicide or suicide attempt cases.

3.2. Suicide and Social Condition

We studied two crucial social factors, in our opinion: 1) the Relative Poverty Rate and 2) the number of domestic violence cases. Between 2017 and 2020, we observed a decrease in the poverty rate, from 8.5% to 7.0%. Despite an increase to 7.6% over the next two years, the rate still remained lower in 2022 compared to 2017 (**Figure 4(a)**). The number of domestic violence cases significantly increased from 2017 to 2020. In 2020, there were 12,121 cases, which is 124.22% higher than in 2017 ($p < 0.001$). Despite a decrease of approximately 8% over the next year, resulting in 11,171 cases, it is still 115.86% higher than in 2017 (**Figure 4(b)**) ($p < 0.0001$). Upon closer analysis, significant growth was evident in all distinct categories, each attaining statistical significance ($p < 0.05$). Notably, the

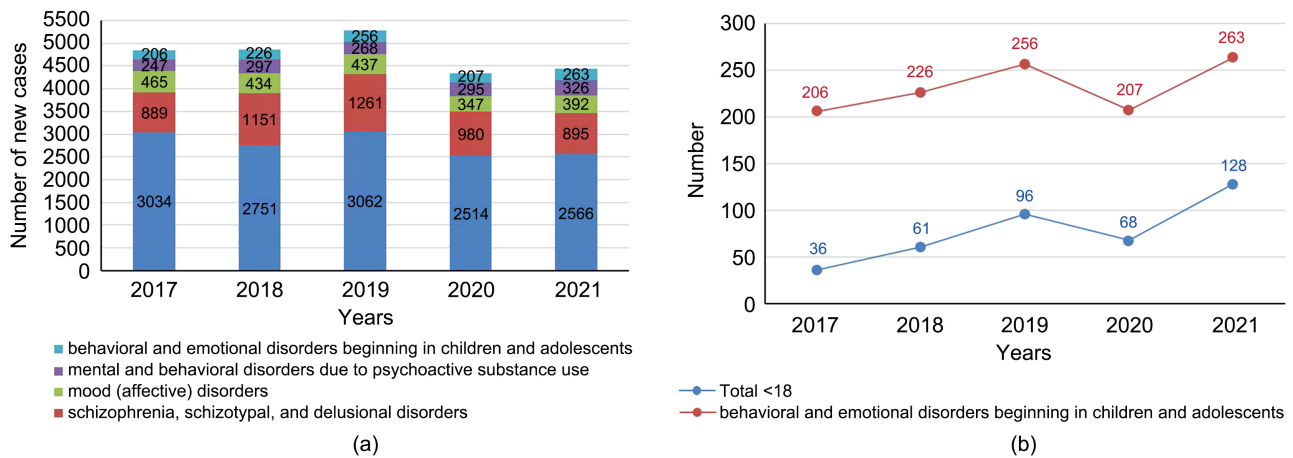


Figure 3. (a) Mental illness cases by years; (b) Suicide cases in individuals under the age of 18 and behavioral and emotional disorders beginning in children and adolescents.

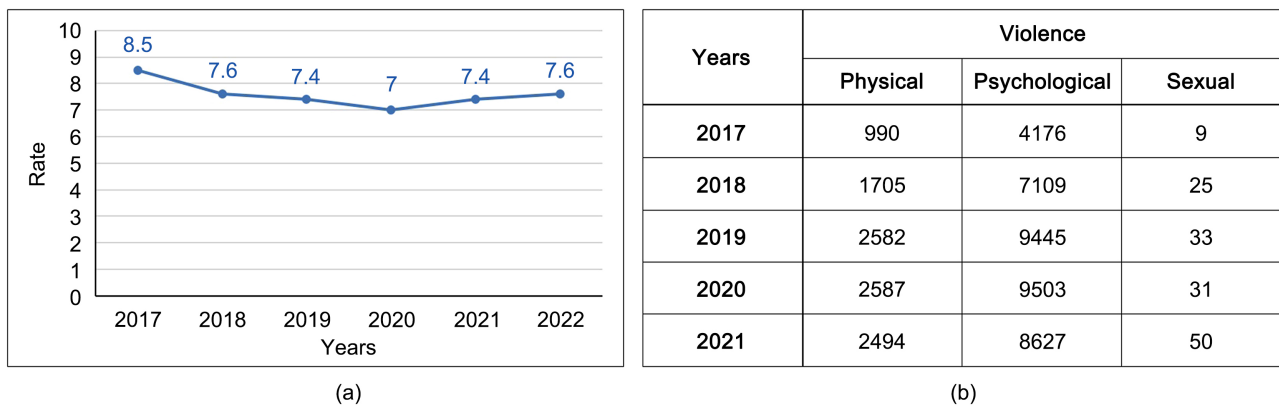


Figure 4. (a) The Relative Poverty Rate in Georgia by years (share of population under 40 percent of the median consumption); (b) The number of domestic violence cases in Georgia by years.

most substantial increase was observed in the category of sexual assault, showing a marked increment, rising from 9 in 2017 to 50 in 2021 ($p < 0.01$). The relative level of poverty does not demonstrate a statistically significant correlation with either the number of suicides or cases of mental disorders. However, a clear relationship exists between the prevalence of domestic violence and the number of suicides among women ($p < 0.01$) and in the age group 18 - 25 ($p < 0.05$). An alarming result emerged from the analysis of the significant increase in sexually motivated domestic violence (455.55%), which strongly correlates with cases of suicide in underage individuals ($p < 0.01$).

4. Discussion

The study of such a crucial issue as suicide, which, according to the WHO, ranks as the fourth leading cause of death among individuals aged 15 - 29, and the analysis of comorbid factors is unquestionably essential both at local and global scales. Analyzing suicide trends and researching their causes in developing countries, such as Georgia, where this issue is particularly acute, holds para-

mount importance. It is crucial for the country itself, helping to identify potential strategies to combat it, and it also carries global significance.

This study assesses suicide trends in Georgia over the past few years and examines whether these trends are associated with widely recognized risk factors, such as mental health or domestic violence.

Data analysis revealed a significant increase in the number of suicides over the period from 2017 to 2022, amounting to an increase of approximately 54%, which is notably higher than the approximately 2% increase observed in the United States, according to the CDC (Garnett & Curtin, 2023). This rise does not appear to be linked to the economic state of the country but may be connected to mental disorders. In particular, we found a significant correlation between the increase in suicidal behavior in men and Substance Use Disorder (SUD), while suicides under the age of 18 are definitely associated with behavioral and emotional disorders beginning in children and adolescents. This correlation is consistent with global practice and literature (Lynch et al., 2020; Onaemo et al., 2022; Breslin et al., 2020; Mohammadi et al., 2023). Despite the general trend, there is a decline in the age group over 50 years old, as is also observed in the United States. However, suicides under the age of 18 decreased in the United States during the 2017-2021 period, whereas in Georgia, the increase was as high as $\approx 70\%$ ($p < 0.01$). This increase may be attributed to the alarming rise in domestic sexual violence over the years. Suicidal behavior in women and young adults (18 - 25) also correlates with an increase in family violence. This link is also logical, as it is widely accepted that these groups are the most vulnerable (Kavak et al., 2018). In a gender context, as is the case worldwide, males exhibit a higher rate of suicide attempts compared to females. For example, in 2022, the ratio was approximately 3.9 in the USA and 3.6 in Georgia.

Although some studies have suggested a potential link between low income and suicide, this connection remains controversial and unverified (Iemmi et al., 2016). Our study did not uncover any notable correlation between the rise in suicide rates and the economic condition of the country.

Despite our best efforts to conduct a comprehensive analysis of this topic, there is limited statistical data available in Georgia. For instance, we lack information on how many people with suicidal behavior were seen by a psychiatrist. This limitation constrains our research. While we hope that this work contributes a small part to building a protective wall against suicide, we are confident that further research will be necessary for a more comprehensive analysis of suicide trends.

To better understand the psychosocial factors that contribute to suicide in Georgia, future research could use primary data collection methods, such as interviews or focus groups. These methods may allow for a more in-depth examination of the lived experiences and perspectives of those affected by suicide, as well as the larger cultural, social, and psychological contexts that influence suicidal behavior. Engaging with community members, mental health profession-

als, and other stakeholders can provide valuable insights into the complexities of suicide in Georgia, such as stigma, help-seeking behaviors, and social support networks.

5. Conclusion

Our research data reveals a concerning reality. Georgia's substantial increase in suicides from 2017 to 2022 sharply contrasts with the the rest of the world. This surge doesn't seem tied to the country's economic status but points to underlying mental health issues. Notably, we observed a strong correlation between the increase in suicidal behavior among men and Substance Use Disorder (SUD), while suicide among individuals under 18 correlates with behavioral and emotional disorders that begin in childhood and adolescence. Additionally, domestic violence, particularly domestic sexual violence, has played a distressing role in the rising suicides in Georgia, impacting not just women but also young individuals. Despite limitations stemming from incomplete statistics, our study sheds light on critical issues. However, it's clear that comprehensive analysis and further investigation are essential to addressing the multifaceted factors contributing to this alarming trend.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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