CHAPTER 1

Epidemiology of Suicide and Data Quality in Bangladesh

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Abstract As a public health problem, suicide gets less attention than it deserves in Bangladesh. The exact rate of suicide is still arguable based on different sources as the country does not have any national suicide surveillance system and it varies in different reports and empirical studies. We know very little about the epidemiology of suicidal ideation, plan, and non-fatal attempts. The available evidence suggests that the majority of suicides happen among young populations especially those under 30 years of age, females are dying more than males, and students and housewives are vulnerable groups. Life events, psychiatric disorders, unemployment, social isolation, sexual abuse, marital discord, and familial disharmony are the prominent risk factors for suicide. Social events show more harmful associations than psychiatric illnesses. The family has an untapped role in suicide prevention as a significant proportion of suicides could be attributed to events closely related to family conflicts. Forensic medicine and police are identified as the prominent sources of data for suicide research in Bangladesh. This chapter aims to discuss rates, gender distribution, and risk factors for suicide in Bangladesh. It also discusses the sources of suicide data in the country along with concerns about its quality.

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1 Introduction

According to the World Bank, Bangladesh has been one of the fastest growing economies in the world over the past decade (The World Bank, 2022). Like many other developing nations, Bangladesh is also experiencing enormous political, environmental, and social challenges within itself. Her most significant challenge is the country's large population. Dhaka, the capital, is the sixth most densely populated city in the world, with around 29,069 per square kilometer (World Atlas, 2020).

Although the public health scenario has improved remarkably in Bangladesh over the last 30 years, the country still faces significant health challenges, and there are still numerous health issues that its healthcare system is yet to handle successfully (Muhammad et al., 2017). Suicide is one of them (Shah et al., 2017). Suicide is a complex phenomenon and is considered as a major public health problem. Not only demographic factors but also an amalgam of psychological, social, biological, cultural, and environmental factors pushes an individual to die by suicide (Zalsman et al., 2016). Effective suicide prevention warrants good empirical studies, and epidemiological data helps us to identify the population at risk, emergency preparedness, and population-level disease progression, and this, in turn, can be used to reinforce decision-making (Fairchild et al., 2018). Against this backdrop, this chapter is aimed to explore the epidemiological aspects of suicide in Bangladesh and evaluate the quality of suicide data in Bangladesh.

2 Epidemiology of Suicide in Bangladesh

2.1 Suicide Rate

Bangladesh has no central suicide database or national suicide surveillance system. To the best of our knowledge, no nationwide study has been conducted to assess the burden of suicide in the country in different age groups. There are wide variations among the rates published in World Health Organization (WHO) reports, non-government organization data, and empirical studies. Above all, there are concerns about under-reporting and misclassification of suicides that hide the real gravity of the problem. The WHO publishes suicide rates periodically using a modeling approach. We mention the WHO-published suicide rates in Bangladesh in 2012, 2016, and 2019 in Table 1.

Table 1 Suicide rate in Bangladesh according to WHO reports

Year	*Sex*	*Number of suicides*	*Crude suicide rate (per 100,000)*	*Age-standardized suicide rate (per 100,000)*
2012	Total	10,167	6.6	7.8
	Female	5,773	7.6	8.7
	Male	4,394	5.6	6.8
2016	Total	9,544	5.9	6.1
	Female	5,666	7.0	6.7
	Male	3,878	4.7	5.5
2019	Total	5,998	3.7	3.9
	female	1,331	1.7	1.7
	Male	4,667	5.7	6.0

Adapted from WHO (2014, 2017, 2021)

Surprisingly, the data revealed that Bangladesh is relatively prosperous in suicide reduction without any visible efforts and research from the government. In 2012, the suicide rate for both sexes was 7.8/100,000, while it was 6.1/100,000 in 2016, and 3.9/100,000 in 2019. Another surprising finding is that the rate was more in females until 2016, but the recently published 2019 data showed that males died more than females, as shown in Table 1. WHO (2014) reported that the age-standardized suicide rate for both sexes was 7.8/100,000: for males it was 7.3/100,000 and for females 8.2/100,000. A community-based survey conducted by Feroz and his colleagues identified the rate of suicide attempts was 281.8 per 100,000 and the rate of suicide was 128.8 per 100,000 which seems to be significantly higher in comparison to the WHO reports (Feroz et al., 2012). Another community-based study with 20 years duration conducted in South-East part of the country from 1983 to 2002 identified a suicide rate of 39.6 per 100,000 population (ICDDR,B, 2003). Mashreky and his colleagues interviewed 819, 429 community populations from 12 different districts of Bangladesh in 2003 and found the rate of suicide was 7.3 per 100,000 population (Mashreky et al., 2013). Another rate was revealed from police data from 1996 to 2014 that revealed the rate of unnatural death was 10.4 per 100,000 population; among them, hanging and pesticide poisoning covered 6.5 per 100,000 population (Chowdhury et al., 2018). The unnatural deaths include hanging, pesticide/medication poisoning, road traffic, railway, and waterway accidents, fall from height, construction injury, snake bite, drowning, electrocution, thunderbolt injury, and burn-related deaths (Chowdhury et al., 2018). Another report published in 1998 found that the suicide rate among young populations was 30 per 100,000 populations living in the rural part of Bangladesh (Ruzicka, 1998 cited in Begum, Rahman et al., 2017). A recent study in *Jhenaidah* district of Bangladesh assessed 3,152 suicide data of an NGO (*Societies for Voluntary Activities (SOVA*) during 2010–2018 (Khan et al., 2020). The study found

the suicide rate was 20.6/100,000 in *Jhenaidah* (Khan et al., 2020). Available evidence suggests that suicide happens more in the peripheral districts and rural parts mentioning *Chuadanga*, *Jenaidah*, *Kustia*, *Meherpur*, *Jashore*, and *Chandpur* (Arafat, 2019a). However, caution is warranted to consider the areas with high rates as we do not have any countrywide data and the rate varies widely.

2.2 Gender Distribution

In Bangladesh, it has been shown that females are dying more by suicide in the available literature which is opposite to the Western country distribution (Arafat, 2019a, b; Tandon and Nathani, 2018; Bachmann, 2018; Jordans et al., 2014; Shahnaz et al., 2017). Several empirical studies revealed this female predominance in Bangladesh (see Ahmad and Hossain, 2010; Reza et al., 2014; Feroz et al., 2012; Talukder et al., 2014; Ali et al., 2014; Shah et al., 2017, 2018; Arafat et al., 2018; Qusar et al., 2010; Khan et al., 2020; Mashreky et al., 2013). We speculate that patriarchal societal norms, perceived passive gender roles, early marriage, low empowerment, comparatively lower educational attainment, forceful marriage, and lack of economic freedom could be the potential reasons for this high rate of suicide in females (Reza et al., 2014; Feroz et al., 2012; Arafat, 2017, 2019b). However, further studies are warranted to identify the precise explanations for this female dominance in suicide in Bangladesh.

2.3 Age Distribution

Arafat (2017) cited in his review that the younger generation of Bangladesh is dying more by suicide than other age groups. Suicides are noted from 8 to 78 years old (Arafat, 2017). We identified only one study revealing the highest rate of suicide among the older age group (Mashreky et al., 2013). Several other studies identified that the third decade (20–29 years) of life is the most risky period for suicide in Bangladesh (see Arafat, 2017, 2019a; Feroz et al., 2012; Ali et al., 2014; Choudhury et al., 2013; Hossain et al., 2012; Sarkar et al., 2013; Talukder et al., 2014; Begum, Khan et al., 2017; Ahmad and Hossain, 2010). Loss of life during this decade creates an immense social burden. This is the time of life when people start to contribute to society and family. Many of the deceased have little kids and spouses. Therefore, it causes a huge burden on society. The recent trend of increased suicides among adolescent students in Bangladesh is a major matter of concern. It is important to note that all the studies assessed a group of populations in a specific period of time. To get a clearer picture, there is a need for nationwide long-term follow-up studies.

2.4 Risk Factors for Suicide

Assessment of risk factors for suicide is a neglected area of Bangladesh. The first case–control study was published in 2013 by Reza and his colleagues. It found several risk factors mentioning as love affair problems, discord with relatives, economic hardship, academic failure, long-term disability, chronic diseases, past suicidal attempts, familial conflict, sleep disturbance, and substance abuse (Reza et al., 2014). The study included samples of both fatal and non-fatal attempts. Nevertheless, it did not clearly indicate the number of suicides and the number of self-harm cases. The only case–control psychological autopsy study revealed existing mental illness, past suicidal attempts, immediate life events, physical disability, physical abuse, social isolation, unemployment, substance abuse, and encounter with sexual abuse as notable risk factors for suicides (Arafat, Mohit et al., 2021b). It also revealed that individuals with psychiatric disorders are 15 times more likely to, and individuals who experienced sexual abuse are 12 times more likely to die by suicide. A separate analysis revealed different characteristics of suicide with and without mental illness. It noted that psychiatric disorders were more common in suicides among males, adults, and deceased living alone (Arafat, Mohit et al., 2021a). In 2021, Arafat and colleagues, in their psychological autopsy study reported that social risk factors such as life events, physical and sexual abuse, employment, and social isolation are playing a more influential role than clinical risk factors like psychiatric disorders (Arafat, Khan et al., 2021). Arafat and Khan (2021) shared that there is a close relationship between psychosexual issues with suicides in Bangladesh due to sociocultural effects. About 47% of the suicides are taking place concerning sexual and marital matters such as extramarital relationships (12%), premarital love relationships (12%), sexual abuse (6%), and forceful marriage (2%) (Arafat and Khan, 2021). Li et al. (2021) analyzed that younger women within one year of pregnancy are more vulnerable to committing suicide. Age, education, employment, living with parents, and ownership are also reported as risk factors by Begum et al. (2017), and they found that adolescents who live with other people than their parents and are unemployed have a higher risk of committing suicide (Begum, Rahman et al., 2017). Shah et al. (2017) found that conflict within the family (34.32%) and sexual harassment and problems in the relationship (10.34%) were the prominent risk factors for suicide. Also, Arafat (2017) highlighted in his review that a quarrel between husband and wife is a common risk factor for suicide in Bangladesh. Another research by Arafat et al. (2018) found affair-related issue (14.25%) is a major contributor to committing suicide. Research by Khan et al. (2020) concluded that married women between the ages of 15 and 29 who have experienced physical and sexual abuse and who live in rural regions are the group most at risk for engaging in suicidal behavior. Sharmin Salam et al. (2017) identified that married adolescents are 22 times more likely to attempt suicide than never-married people in Bangladesh.

Suicide is extremely multifactorial. A higher prevalence of psychiatric disorders is noted in Western countries while in Bangladesh, along with mental illness, life events closely related to family members (family discord, disapproval of affair marriage) and psycho-sexual events (extra-marital affair, sexual harassment) play a significant role in suicides (see Feroz et al., 2012; Reza et al., 2014; Arafat, 2017, 2019a; Ali et al., 2014; Hossain et al., 2012; Talukder et al., 2014; Ahmed and Hossain, 2010; Arafat and Khan 2021; Shahnaz et al., 2017; Shah et al., 2017; Arafat et al., 2018). According to the empirical studies from the aforementioned review, married women and adolescents between the ages of 12 and 29 who live in rural areas and who are subjected to physical and sexual abuse by their husbands and their families are significantly more likely to die by suicide, attempt suicide, or have suicidal thoughts.

Mashreky and his colleagues found more suicides in rural areas in comparison to urban parts of Bangladesh. Repeated countrywide studies are warranted to get the picture more precisely. The reasons for higher suicide rates in rural areas of Bangladesh are taking place due to lack of literacy and failure to overcome poverty (Mashreky et al., 2013). Several studies noted that suicide is happening more in married persons in comparison to never-married persons (Feroz et al., 2012; Ali et al., 2014; Ahmad and Hossain, 2010). Marriage is found as a protective factor against suicide in Western countries which is the opposite in Bangladesh. We speculate several possibilities like early marriage, economic dependency on parents, and less freedom in choosing partners (Arafat, 2017).

2.5 Methods of Suicide

The common methods of suicide in Bangladesh include hanging, pesticide poisoning, road traffic, and railway accidents, falling from a height, drowning, electrocution, firearms, cut injury, and burn (Arafat, 2019a, 2017; Chowdhury et al., 2018). Hanging and poisoning are the two prominent methods of suicide in Bangladesh. A recent systematic review identified that hanging was the most commonly used method in Bangladesh during 2011–2020 (Arafat, Ali et al., 2021). Earlier studies conducted in rural samples found poisoning as the most common method, while recent studies found hanging as the most common method (Chowdhury et al., 2018; Arafat, 2019a; Mashreky et al., 2013; Shahnaz et al., 2017; Arafat, Ali et al., 2021; Halim et al., 2010). Ban of class I pesticides (the year 2000) could be an important factor in Bangladesh (Chowdhury et al., 2018). Police data for the period 1996–2014 revealed that pesticide poisoning was the commonest method (37.1%) of suicide, followed by hanging (30.5%) (Chowdhury et al., 2018). Other studies found hanging as the commonest method of suicide (see Sharmin Salam et al., 2017; Shah et al., 2017; Arafat et al., 2018; Feroz et al., 2012; Arafat, Mohit et al., 2021b; Ali et al., 2014; Hossain et al., 2012).

2.6 *Rare Suicide Events in Bangladesh*

2.6.1 *Protest Suicide*

Sometimes, suicide is a tactic of persuasion (Biggs, 2013). Suicide protest is noted when someone selects suicide as a form of tactic to obtain their argument against potent challenges (Tilly, 2013). In the first week of July 2022, a 50-year-old businessman from Kushtia, Bangladesh, attempted suicide in front of National Press Club (NPC) in Dhaka by setting himself on fire (Correspondence, 2022). He got burns on 90% of his body and died the next day in a specialized burn hospital. He attempted but couldn't get hold of his 1.2 Crore taka ($1.3 million) that he lent to the owner of a company (Correspondence, 2022). He arranged a human chain in front of the NPC a few days earlier as a method of protest, but it did not assist him much to bring back his money from the borrower.

In the last week of October 2022, a 35-year-old, mother of three children, from Narayanganj attempted suicide along with her three children (3,10, and 16 years old) by setting herself and the children on fire in front of NPC, Dhaka (Representatives, 2022). The family attempted suicide because a local politically influential person was trying to evict them from their home. The lady tried to seek help from all sorts of society but failed to resolve the issue (Representative, 2022). They took sedative pills before pouring Kerosene on their bodies to set fire.

Bangladesh is facing an adverse political situation and financial problems due to price hikes and loss of jobs which is complicated by the COVID-19 pandemic and the Russia-Ukraine war. Two incidents have occurred recently where the victims were the prey of social injustice and as a method of protest, they attempted self-destruction. The cases indicate some factors of suicide prevention in Bangladesh. It indicates the role of social justice in suicide prevention. Both of the attempts happened in a nationally focused place, i.e. national press club, and both of the cases set fire for dying.

2.6.2 *Group Suicide*

In 2007, nine family members in Mymensingh died by suicide which was attributed to shared delusion (Selim, 2010). The father of that family was the primary motivating person for that event.

3 Quality Suicide Data Concern in Bangladesh

Previously, we discussed the variations in the suicide rate in Bangladesh based on WHO reports, NGO data, and empirical studies. The issue has been complicated by the lack of national suicide surveillance and nationwide epidemiological study of suicide and suicidal behavior in the country (Arafat, Hussain et al., 2021; Arafat, 2017, 2019a). Furthermore, the quality of suicide data has always been challenged in Bangladesh due to possible under-reporting and misclassification resulting from low mental health and

suicide literacy, criminalized legal status, and high stigma (Arafat, Hussain, et al., 2022; Khan, 2005). One previous study identified that Islamic countries record more "other violent deaths" than the UK indicating the misclassification (Pritchard and Amanullah, 2007). Another recent study compared the suicide data of Muslim countries with that of Western ones and identified the possibility of under-reporting of suicide (Pritchard et al., 2020). According to the WHO (2014) report, among the 183 countries, only 87 had good-quality suicide data, while suicides from the other 96 countries are being calculated by a modeling approach that covered 61% of total deaths by suicide. Good-quality suicide data is more pertinent in high-income countries than the countries with low income (WHO, 2014). The report revealed that 50 high-income countries with good-quality suicide data covered 98% of suicides in high-income group countries, whereas the rest of the 37 low- and middle-income countries (LMICs) covered only 22% of suicides that happened in LMICs in 2012 (WHO, 2014). Ritchie et al. (2015) mentioned that data on suicides is flawed due to the frequency and reliability of vital registrations of data in many countries. Generally, the estimated suicide rates from the WHO member states are based on modeling assumptions. Also, the official figures submitted to WHO by its member states are supposed to be inaccurate as they do not have a rigorous suicide registration system. Furthermore, suicidal behavior is contemplated as an illegal act in some member states, resulting in under-reporting and misclassification of suicide-related data.

Bangladesh is a country with a LMIC background where more than 90% of the population are Muslims. Suicide is prohibited in Islam, and it is a criminal offense in the country. Mental health literacy is supposed to be poor, and studies identified a low suicide literacy and high stigma toward suicide (Arafat, Hussain et al., 2022; Arafat, Mohit et al., 2021b; Sharmin Salam et al., 2017; Shahnaz et al., 2017). All these reasons contribute to the possible under-reporting and misclassification of suicides and suicidal behavior. We mention some possible areas of post-mortem examination and possible caveats of under-reporting during the forensic examination in Chap. 2 (Bose et al., 2023). We also discuss the help-seeking of and health services for suicidal behavior in Chap. 3 (Arafat, 2023). Additionally, due to low mental health and suicide literacy, family members usually make homicidal claims when death happens in the in-laws' environment without considering mental illness, personality traits, and life events. They usually consider suicide a monocausal outcome. It is important to note that, currently, we do not know the exact proportion of under-reporting and misclassification of suicides in Bangladesh.

The lack of nationally reliable sources of suicide data impedes research and policy making in Bangladesh (Arafat, 2017). Available evidence suggests that the majority of the suicide data are collected from police, records available in forensic medicine departments (which only includes data of deceased whose medico-legal autopsy is performed), some court reports, and a few epidemiological studies conducted in specific areas and/or in specific populations such

as adolescents or pregnant women (Arafat, 2017; Feroz et al., 2012). Recently, data collected from newspaper reports have been used in some publications (Shah et al., 2017; Arafat et al., 2018).

4 Current Challenges and Way Forward

4.1 Current Challenges

There is inadequate empirical large-scale nationwide research on suicide and its risk factors in Bangladesh even though an increased number of articles are coming out in recent years (Arafat, Hussain et al., 2021). Another fundamental issue that should be mentioned here is that the recent suicide-related publications are performed by collecting data from print and online media report analysis (Arafat, Hussain et al., 2021). Media reports could be a source of data, however, it is necessary to consider the epidemiological aspects of any entity. There are several reasons behind that such as not all suicides publish in the media and the data collection method for preparing a media report is not scientific. Certainly, all suicides are being reported in newspapers, especially suicides in rural areas. Crime reporters are not efficient and interested to bring out mental health-related factors. Suicide is a complex multifactorial outcome. Previous studies identified that the quality of suicide reporting in both online and print newspapers is poor compared to the WHO media guidelines (Arafat et al., 2019, Arafat, Khan et al., 2020). One study conducted in India comparing media reporting with epidemiological data identified that there are significant discrepancies between suicide metrics in the community population and the reports collected from the media (Armstrong et al., 2019). Additionally, no nationwide, longitudinal, and interventional research activities were undertaken in the last decade and lack of research funds available for the researchers to conduct empirical research on suicide (Arafat, Hussain et al., 2021).

Poor mental health and suicide literacy, high stigma, and criminalized status of suicidal behavior fundamentally affect suicide research, help-seeking, and suicide prevention in Bangladesh (Arafat, Hussain, et al., 2022). The relationship between mental illness and suicidal behaviors is documented in the country likewise the other parts of the world (Arafat, Mohit et al., 2021b; Zalsman et al., 2016). The psychological autopsy study identified that 87% of the suicides were not in contact with any mental healthcare setting which may be attributed to the before-mentioned aspects (Arafat, Mohit et al., 2021b). The same study also identified that psychiatric illnesses were more common among suicides living in upper and middle socioeconomic conditions than the deceased living in lower social class (Arafat, Mohit et al., 2021a). This also can be attributed to the fact that upper- and middle-class people may have better mental health and suicide literacy so that they can identify the illness.

Lack of quality suicide data is one of the prime challenges in Bangladesh because it affects all aspects of suicide prevention. Collecting data on a sensitive subject like suicide due to confidentiality issues in a conservative Islamic country, where it is criminalized, is challenging. Given that a substantial number of risk factors are connected to recent, very emotional occurrences, next-of kins are reluctant to talk about those (Arafat, 2021). The lack of quality data and adequate empirical studies could be attributed to some extent to this social barrier in Bangladesh.

4.2 Way Forward

There is no alternative to a national suicide surveillance system which should be an immediate priority in Bangladesh. Enduring a monitoring system would ensure the quality of suicide data at the community level. Standard quality suicide data would help suicide prevention in all aspects.

There is a paucity of suicide-related research in Bangladesh, and inadequate activities around suicide prevention are the major obstacles to implementing suicide prevention programs in Bangladesh. More empirical research activities and multilateral collaborative research in Bangladesh should be undertaken, and the emphasis should be on identifying the risk and protective factors for suicidal behavior in Bangladesh. Suicide decriminalization should be given immediate priority; this has already been accomplished in several industrialized nations, including those neighboring countries in Asia, such as India. Soron (2019) recommended decriminalizing suicide in Bangladesh; authorities need to ensure that they should not punish people for attempting suicide. Society and the state should provide adequate support systems to people experiencing mental distress.

Evidence-based initiatives that aim to raise awareness of the importance of living in the moment can be successful. With the help of financial bursaries that would cover the tuition and other expenditures of secondary schooling (academic, technical, or religious), the focus would be on a secondary school where both genders will be encouraged to enroll. Not just at the schools taking part in the planned experimental project but also in secondary schools this may be addressed through educational initiatives. Despite the dire need, very few initiatives to prevent suicide have been launched throughout the nation. The policy makers should obtain different strategies which can provide expeditious support to accomplish the sustainable development goal of suicide reduction.

Additional multidisciplinary research is required to pinpoint the risk factors and their connections to the biopsychosocial aspects of suicide that already prevail, as well as to develop the ideal, culturally specific preventive plan that makes the most use of the resources to deal with. Following WHO recommendations, a national suicide prevention program (Khan et al., 2021) should be implemented to get the attention of local, regional, and international stakeholders. Suicide is also often associated with an act of hopelessness, rage, and fleeing away from unbearable pain due to disturbances within the family

system, personal loss, and lack of social support, and the importance of family roles cannot be avoided for suicide prevention (Arafat, Saleem et al., 2022; Edwards et al., 2021; Prabhu et al., 2010).

5 Conclusion

This chapter draws attention to the epidemiological metrics of suicide and the quality and sources of data in Bangladesh. For a national suicide prevention strategy, the country needs further epidemiological studies on suicide to identify a national rate of suicide. Prevention strategies could prioritize young adults, females, students, and housewives. Increasing mental health and suicide literacy would help in all aspects including conducting epidemiological studies. Reducing stigma and decriminalization of suicide will encourage the sufferer to seek medical and/or psychiatric care. The psychiatric services spectrum should be expanded for suicidal behavior across the country. Along with other prevention strategies, gate-keeper training and involving the family members could be tested in Bangladesh as a significant proportion of suicides are closely associated with family-related events. Immediate steps should be ensured to establish a source of quality suicide data because, without quality data, there is a poor chance to have a successful suicide prevention strategy in the country.

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