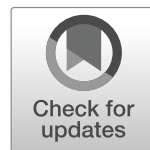


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## LETTER TO THE EDITOR



## Student Suicide Risk and Gender: A Retrospective Study from Bangladeshi Press Reports

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According to the World Health Organization (WHO 2018), suicide has become the second leading cause of fatality among the 15–29-year-old age group where many of whom are likely to be students. Similar findings have already been reported in Bangladesh. Previous research in Bangladesh reported approximately 61% of total suicide cases were found to be below the age of 30 years (Shah et al. 2017). In a recent systematic review, the mediating critical factors of student suicide included stressful academic environments, trouble with personal and familial relationships, internal family and parental problems, financial distress, alcohol and drug use, exposure to traumatic events, feelings of social isolation, and other mental health problems (i.e., depression, hopelessness, loneliness, anxiety, etc.) (Yozwiak et al. 2012). These are similar to those reported in Bangladesh, i.e., relationship complexities, academic problems, parental relationship problems, etc. (Arafat and Mamun 2019; Mamun and Griffiths 2020; Mamun et al. 2020).

Gender differences in suicide and suicidal behaviors (i.e., suicide attempts) have been reported globally (Arafat 2019). Situational facilitating factors include their roles, responsibilities, social status, and lack of empowerment, and these socially constructed differences interact with biological differences to contribute to gender differences in suicide and suicidal behaviors (Göktaş and Metintaş 2019; Vijayakumar 2015). Studies suggest that females have

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higher suicidal tendencies than males but are less likely to be suicide victims (Kumar et al. 2017; Tsigotis et al. 2011), because more males commit suicide (WHO 2018). Moreover, the WHO (2018) estimates that there are approximately 15 suicides per 100,000 males and 8 suicides per 100,000 females globally, and that is two times higher among males. Although, gender-based studies focusing on suicide issues have been studied globally, no study has been conducted on gender-based issues in Bangladesh, although a few retrospective Bangladeshi studies have studied suicides among the general Bangladeshi population using press reports or forensic department data (Ali et al. 2014; Arafat 2019; Arafat et al. 2018; Bagley et al. 2017; Begum et al. 2017; Feroz et al. 2012; Mamun et al. 2020; Mamun and Griffiths 2019; Shah et al. 2017).

Additionally, Bangladesh appears to have fewer suicide prevention measures in place compared to other countries, even though it is a major public health issue in the country. The country still lacks any kind of suicide surveillance system, national suicide database, and national suicide prevention strategies for both general and specific cohorts (Bagley et al. 2017; Mamun and Griffiths 2019; Salam et al. 2017; Shah et al. 2017). However, evidence-based suicide data is needed for the implementation of targeted prevention strategies. Therefore, this study investigated student suicide-related factors (e.g., type of academic institutes, year of study, month in which the suicide occurred, specific suicide reasons, method of suicide, etc.) that could be helpful to the public health policymakers in Bangladesh.

## Methods

The methodology of the present study followed that of previous research (e.g., Arafat et al. 2018; Shah et al. 2017) conducted in the developing countries like Bangladesh, where no national suicide database or surveillance system are available (Mamun and Griffiths 2019). Consequently, collecting retrospective data from press reports was used in this study. An online Bangladeshi news portal-based retrospective study was conducted using keywords, (e.g., Bangladeshi words for suicide ( “Chatro Attohotma”)), “Bangladesh,” “student,” and “suicide” on *Google’s* search engine. Reports dating between January 1, 2018, and June 30, 2019, were considered. A total of 153 suicide case reports were identified, and after omitting general suicide reports (i.e., non-students), a total of 56 suicide cases were retained for the final analysis.

## Results

A total of 56 Bangladeshi students’ suicide cases reported from January 2018 to June 2019 in the Bangladeshi print media were collected, read, and analyzed. Based on these reports, most were male ( $n = 40$  out of 56) and Muslim ( $n = 43$  out of 55). Suicide was most common among those aged 21 to 25 years (22 cases, although 9 case reports did not include the age), followed by 15 to 20 years ( $n = 15$ ), 26+ years ( $n = 6$ ), and less than 15 years ( $n = 4$ ). Most of the suicide victims were at a public university (17 out of 56), followed by secondary school ( $n = 14$ ), medical college ( $n = 10$ ), or national college ( $n = 6$ ). In relation to education level, most of them were in undergraduate to upper level ( $n = 37$ ), followed by secondary school ( $n = 15$ ), and intermediate level (11 to 12 grade;  $n = 4$ ). The most used methods of suicide were hanging (42 out of 53 reported cases), followed by poisoning ( $n = 5$ ), jumping from a high building

( $n = 3$ ), jumping in front of a train ( $n = 2$ ), and one case of using sleeping pills. A total of 11 out of 42 reported cases committed suicide due to relationship and affair problems, 10 cases for exam failure, and 6 cases as a result of quarreling with parents. Only 3 cases were reported in which reference was made to a pre-existing psychiatric condition (2 reporting depression and 1 reporting an unspecified mental disorder). The most prevalent time for committing suicide was midnight (25 out of 50 reported cases), followed by noon, morning, and evening (Table 1).

**Table 1** Distribution of suicide victim characteristics by gender

Variables	Total ( $n$ ; %)	Gender		Statistics					
		Male (40; 71.4%)	Female (16; 28.6%)	$\chi^2$ test value	$df$	$p$ value			
<i>Age group</i>									
Less than 15 years	4; 7.1%	3 (8.6)	1 (8.3)	5.155	3	0.126			
15 to 20 years	15; 26.8%	14 (40.0)	1 (8.3)						
21 to 25 year	22; 39.3%	15 (42.9)	7 (58.3)						
26+ years	6; 10.7%	3 (8.6)	3 (25.0)						
<i>Type of educational institute</i>									
Secondary school	14; 25.0%	13 (32.5)	1 (6.3)	19.048	5	<0.001			
Higher secondary college	5; 8.9%	5 (12.5)	0 (0.0)						
National college	6; 10.7%	5 (12.5)	1 (6.3)						
Public university	17; 30.4%	12 (30.0)	5 (31.3)						
Private university	2; 3.6%	2 (5.0)	0 (0.0)						
Medical college	12; 21.4%	3 (7.5)	9 (56.3)						
<i>Education level</i>									
School (Grades 5 to 10)	15; 26.8%	14 (35.0)	1 (6.3)	7.724	2	0.008			
Intermediate (Grades 11 to 12)	4; 7.1%	4 (10.0)	0 (0.0)						
Undergraduate +	37; 66.1%	22 (55.0)	15 (93.8)						
<i>Religion</i>									
Hindu	12; 21.4%	9 (23.1)	3 (18.8)	0.125	1	0.721			
Muslim	43; 76.8%	30 (76.9)	13 (81.3)						
<i>Suicide methods</i>									
Hanging	42; 75.0%	28 (73.7)	14 (93.3)	7.005	4	0.046			
Jumping (from high place)	3; 5.4%	3 (7.9)	0 (0.0)						
Poisoning	5; 8.9%	5 (13.2)	0 (0.0)						
Jumping (through the moving object)	2; 3.6%	2 (5.3)	0 (0.0)						
Sleeping pill	1; 1.8%	0 (0.0)	1 (6.7)						
<i>Risk factors</i>									
Academic distress and failure	10; 17.9%	7 (22.6)	3 (27.3)	10.993	8	0.049			
Relationship problems	11; 19.6%	6 (19.4)	5 (45.5)						
Economic distress	3; 5.4%	3 (9.7)	0 (0.0)						
Quarreling with parents	6; 10.7%	6 (19.4)	0 (0.0)						
Mental disorder	3; 5.4%	2 (6.5)	1 (9.1)						
Parental problems	5; 8.9%	5 (16.1)	0 (0.0)						
Political issue	1; 1.8%	0 (0.0)	1 (9.1)						
Torture	1; 1.8%	1 (3.2)	0 (0.0)						
Carrying mobile phone to school	2; 3.6%	1 (3.2)	1 (9.1)						
<i>Attempted time</i>									
Morning	6; 10.7%	5 (13.5)	1 (7.7)				0.329	3	0.949
Noon	15; 26.8%	11 (29.7)	4 (30.8)						
Evening	4; 7.1%	3 (8.1)	1 (7.7)						
Midnight	25; 44.6%	18 (48.6)	7 (53.8)						

The highest number of suicides for males was among those who were secondary high school students, whereas over half of the cases were medical students among the female suicide victims (13 out of 40 males, 9 out of 16 females;  $\chi^2 = 19.048$ ,  $df = 5$ ,  $p < 0.001$ ). Hanging was the most used suicide methods among both gender (14 out of 15 females compared to 28 out of 38 males;  $\chi^2 = 7.005$ ,  $df = 4$ ,  $p = 0.046$ ), although males had a more diverse range of methods in committing suicide. With regard to suicide risk factors, relationship problems were the noticeable suicidal factor among the females but not for the male suicides (5 out of 11 females compared with 6 males out of 31 cases) ( $\chi^2 = 10.993$ ,  $df = 8$ ,  $p = 0.049$ ) (Table 1).

## Discussion

This study utilized a total of 56 suicide cases collected over an 18-month period, which is not comparable with any previous Bangladeshi studies as no studies were found assessing student suicide cases. However, one study reported 135 students (37.7%) out of total 358 cases from January 2009 to April 2018 (Arafat et al. 2018), and another study by Shah et al. (2017) reported the number of student victims to be 64 out of 271 suicide reports (23.6%), although they did not mention if any of the cases were duplicates. Likewise, in Bangladesh, global retrospective reports of student suicides are rare. Of these few studies, there were 52 suicides (38 undergraduates and 14 postgraduates) from 1974 to 2002 in Japan (Hori 2005), 6 medical student suicides from July 2006 to June 2011 in the USA (Cheng et al. 2014), 6 medical student suicides over a 10-year period from 2006 to 2016 in Canada (Zivanovic et al. 2018), 5 medical student suicides between 2007 and 2017 in Thailand (Siriphonphaibool and Charoensin 2018), and 16 medical student suicides between 2010 and 2014 in India (Pruthi et al. 2015).

The present study found that male students were more likely than females to commit suicide (40 out of 56; 71.4%). There are no previous Bangladeshi studies that have investigated student suicides, therefore, no comparisons with previous studies can be made. However, previous Bangladeshi retrospective studies on suicide more generally have found females as being more likely to commit suicide (Arafat 2019). Previous findings reported 58% of females among 271 suicide reports (Shah et al. 2017). This is similar to other Bangladeshi studies [i.e., 60% females out of 358 respondents (Arafat et al. 2018), 11 suicides out 16 cases and 15 parasuicides (i.e., attempted suicides and suicidal gestures such as sub-lethal drug overdoses or non-lethal wrist cutting) out of 19 cases in rural communities (Feroz et al. 2012), and 61.5% females in medicolegal autopsies (48 out of 78 deaths due to hanging; Begum et al. 2017)]. Only one Bangladeshi study utilizing postmortem examinations reported that males had higher suicide rates among general people (i.e., 69.2%;  $n = 334$ ; Ali et al. 2014).

Compared with the global literature, a recent study investigated the male vs. female suicide ratio and found that the ratio was 3.8 for the USA, 3.6 for Finland, 1.9 for Japan, and 1.3 for South Korea (Park 2015). Similarly, Indian (Kumar et al. 2017), Turkish (Göktaş and Metintaş 2019), German (Cibis et al. 2012), Taiwanese (Chen et al. 2012), and Japanese (Hori 2005) studies all reported greater suicide rates among males. Moreover, a recent systematic review on global age-standardized suicide mortality rate from 1990 to 2016 data showed that male suicide rates had increased across regions, countries, and among all age groups, except for the 15 to 19 years age group (Naghavi 2019). The findings of the present study support the global suicide trends (i.e., males committing more suicides than females). Why the study's present findings did not concur with the previous Bangladeshi studies is not clear. One possible

reason may be the cohort selection criterion (i.e., only student suicide cases rather than suicide cases more generally).

The present study also found that most of the victims belonged to public university, followed by secondary school, medical college, and national college. Among the female suicide cases, most of them were from medical colleges. This gender-based finding (i.e., the proportion of female medical students committing suicide being more than male medical students) supports the global literature (Pepitone-Arreola-Rockwell et al. 1981; Schernhammer and Colditz 2004), although a few studies have reported higher male medical students' suicide rates in the USA, India, and Thailand (Cheng et al. 2014; Pruthi et al. 2015; Siriphonphaibool and Charoensin 2018).

The present study also observed a wide range of reasons for suicide and concurs with the factors reported in a systematic review on student suicide (Yozwiak et al. 2012). The most highly reported suicide risk factors in the present study were relationship problems, academic distress and failure, altercations with parents, parental relationship problems, mental disorders, and economic difficulties. The reasons of academic distress and failure were not reported in previous Bangladeshi suicide studies among general population as a major suicide risk factors (0.74% in Shah et al. 2017; 3.91% in Arafat et al. 2018). The present study also found that nearly half of the female suicide victims had relationship problems, but much less so for males. In a previous non-representative Bangladeshi study of suicide among five university students in a 10-day period, all but one female victim had relationship complexities, and the remainder committed suicide due to academic distress (Arafat and Mamun 2019). This may be due to the different coping strategies used by females (i.e., after relationship break-ups, females may cope less well with the stressful situation compared to males). Females with a broken relationship history in Bangladeshi culture (i.e., influenced by Islamic norms and values) are viewed very negatively (with divorced women seen by some as sinners). Consequently, females with relationship problems may commit suicide rather than face criticism from family, friends, and neighbors.

The present study found that most suicides were by hanging, although other methods were reported. Based on the previous national previous suicide literature, hanging was also reported as the most common suicide method among Bangladeshi people. Shah et al. (2017) reported that the most common method of suicide was hanging (82.3%) followed by poisoning (7.8%), jumping in front of a train (2.2%), and 0.74% jumped from a high building (0.75%). In another study, the percentages were 60.9% (hanging), 12.9% (poisoning), 3.6% (jumping in front of a train), and 2.5% (jumping from a high building) (Arafat et al. 2018). Like the findings of the present study, the global literature has also reported that the most common methods of suicide are hanging, poisoning, jumping from a high building, and jumping in front of a train in German Bavaria (Cibis et al. 2012), Turkey (Göktaş and Metintaş 2019), India (Arya et al. 2019), and Taiwan (Chen et al. 2012). In regard to gender, female victims often commit suicide by hanging, poisoning, and taking an overdose of sleeping pills, whereas males use a wide range of suicide methods. However, the global gender-specific suicide methods are not clear, and can vary country to country (see McAndrew and Garrison 2007 [for US undergraduate suicides], Park 2015 [for the US, Finland, Japan, South Korea adolescent suicides], and Tsirigotis et al. 2011 [for Poland suicide attempts]). This present study also showed that the most typical time of the suicide was at midnight. Consequently, because this cohort are students who usually live a long way from their families, roommates and peer groups need to be targeted in a prevention capacity about this vulnerable midnight period.

## Limitations

The present study has a number of limitations that should to be considered when interpreting the findings. Importantly, the cases only include those found in press reports and not all suicides will have been reported. Furthermore, the cases identified did not include the total number of suicides among other cohorts during the study period, so whether Bangladeshi students are more vulnerable of than the general Bangladeshi population is not clear. Moreover, because suicide carries a lot of stigma in Bangladesh, families do not like to report such deaths as suicide and may prefer to get such deaths classed as accidental. As far as it is reported in previous literature, suicide is often viewed as a stigma, and the victims' families often suffer psychological distress to how they are treated by others around them if the family has a history of suicide (Mamun and Griffiths 2019 Mashreky et al. 2013). Despite these limitations, the present study provides novel information and knowledge regarding student suicide (i.e., incidence rate, potential risk factors, and most commonly used suicide methods).

## Conclusions and Implications

Although suicide mortality rates have greatly reduced since 1990, suicide remains an important contributor to global mortality across locations, across gender, and between age groups (Naghavi 2019). In respect to this retrospective study, the evidence-based causality of the suicides and associated risk factors will be helpful in contributing to national and international perspectives because there has been relatively little research on the nature of gender differences in suicide. It has been found that 90% of suicide victims are reported to be suffering from at least one mental disorder (Disu et al. 2019; Mamun and Griffiths 2020; Jahan et al. 2020), but in the present study, only three of the suicide victims were reported as having any kind of mental disorder. For reducing student suicide, prevention programs are needed alongside raising awareness, curriculum-based interventions, student support centers, gatekeeper training, and internet-based interventions (Arafat and Mamun 2019; Robinson et al. 2013; Zalsman et al. 2016). These would also help to instill personal and familiar wellbeing and good relationships with others.

## Compliance with Ethical Standards

**Conflict of Interest** The authors declare that they do not have any interests that could constitute a real, potential or apparent conflict of interest with respect to their involvement in the publication. The authors also declare that they do not have any financial or other relations (e.g. directorship, consultancy or speaker fee) with companies, trade associations, unions or groups (including civic associations and public interest groups) that may gain or lose financially from the results or conclusions in the study. Sources of funding are acknowledged.

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**Informed Consent** Not applicable.

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