

S M Yasir Arafat^{1*}, Fahad Hussain², Khandakar Md Jakaria³, Zarin Tasnim Itu⁴, Md. Aminul Islam⁵

Empirical studies on suicide in Bangladesh in a decade (2011-2020)

¹Department of Psychiatry, Enam Medical College and Hospital, Dhaka-1340, Bangladesh.

²Department of Pharmacy, Noakhali Science and Technology University, Noakhali-3814, Bangladesh.

³Faculty of Public Health, Thammasat University, Rangsit campus, Piyachart Building, Khlong Nueng, Pathumthani, 12120, Thailand.

⁴Department of Pharmacy, Mawlana Bhashani Science and Technology University, Tangail-1902, Bangladesh.

⁵Department of Media Studies and Journalism, University of Liberal Arts Bangladesh, Dhaka, Bangladesh.

*email: arafatdmc62@gmail.com

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Abstract

Background: An adequate number of empirical studies is necessary to formulate a national suicide prevention programme.

Aims: To assess the extent of empirical studies on suicide in a decade (2011-2020) in Bangladesh.

Materials and methods: A literature search was conducted to identify the articles available in PubMed, PubMed Central, Scopus, Google Scholar, and BanglaJOL using the search term “suicide in Bangladesh”, “self-harm in Bangladesh”, “poisoning in Bangladesh”, “suicidal behaviour in Bangladesh”. We included all the original articles in full-length format that were published in the English language, accessible in the full texts, published between 2011 and 2020, and assessing suicidal behaviour in Bangladesh. A total of 44 empirical studies were included in this review.

Results: Among the 44 studies, 6.8% were qualitative studies, 34.1% applied interview, 31.8% analysed the secondary data. All the studies followed a cross-sectional design, nine studies assessed youth suicidality, and only one study assessed the suicidality among the elderly. Studies of the earlier half of the decade explored epidemiological aspects, whereas studies in the last five years assessed the newer topics such as quality of media reporting, psychological autopsy study, perspectives after nonfatal attempt, sociological perspectives, ontological perspectives, masculinity, and suicide, and financial loss due to suicide. About 41% of the papers had a collaboration with the authors of other countries, and about 18.2% of the papers were externally funded either partially or fully.

Conclusion: Although newer studies are coming out, suicide is an under-studied public health problem as no nationwide, longitudinal and interventional study has been identified during a decade (2011-2020) in Bangladesh. The proper attention of all the stakeholders is warranted to improve the scenario.

Keywords

Suicide in Bangladesh, self-harm, poisoning, risk factors, Bangladesh

INTRODUCTION

Death by suicide is an increasingly global social and public health concern, and this is an incredibly complicated phenomenon that brings suffering to hundreds of thousands of people around the world every year. Reducing the suicide rate is a national imperative today as about 800,000 people die by suicide each year, which accounts for 1.4% of all deaths, making it one of the top 20 leading causes of mortality (World Health Organization [WHO], 2019). As a continent, Asia accounts for approximately 60% of the world's suicides and has a higher overall suicide rate, lower male-to-female gender suicide rates, and higher elderly-to-general-suicide ratios relative to Western countries

(WHO, 2019; Chen et al., 2012). According to WHO (2019), 79% of suicides occurred in low-and middle-income countries in 2016.

Bangladesh is a densely populated and economically rising country in South Asia.

According to the WHO, there were approximately 5.9 suicides per 100,000 of the population in 2016 in Bangladesh. It should also be noted that there is criticism about the under-reporting of suicides and a lack of suicide surveillance in the country (Arafat, 2019). Criminal status in the legal system and sociocultural stigma contribute to the under-reporting of suicides (Arafat, 2019). There is a lack of epidemiological data

necessary to formulate a suicide prevention strategy. One recent study found that Bangladesh is far behind in fulfilling the prerequisites of a national suicide prevention strategy (Arafat, 2020). Despite the lack of national focus, recently an increased number of studies are coming out and sporadic prevention strategies have started. However, to initiate and implement a national suicide prevention programme, a holistic strategy is needed to explore all the aspects of suicide and suicide prevention. An adequate number of empirical studies is warranted to identify the problems and to test the interventions. Furthermore, the assessment of empirical research on suicide would identify the existing research gaps that have not been done systematically in Bangladesh. Therefore, we aimed to assess the extent of empirical studies on suicide in the last decade to identify the research gaps and immediate priorities for formulating a national suicide prevention strategy. Moreover, this review would guide the policymakers to identify, prioritise, decide, and distribute the available resources.

In addition to the existing knowledge base, this paper illustrates a focused and holistic picture of suicide in Bangladesh by assessing the empirical studies over a decade to come up with viable prevention strategies.

MATERIALS AND METHODS

Article searching

A literature search was done to identify the articles in PubMed, PubMed Central (PMC), Scopus, Google Scholar (GS), and BanglaJOL with the search term “suicide in Bangladesh”, “self-harm in Bangladesh”, “poisoning in Bangladesh”, “suicidal behaviour in Bangladesh”. Initial screening was done by checking the title and the abstract of the article. Subsequently, the full text was assessed. After removing the duplicates, 44 articles were included in this review (Figure 1).

Inclusion criteria

Original peer-reviewed articles published in full-length format, in the English language from 2011 to 2020 with a fully accessible document were included in the study.

Exclusion criteria

Articles published in other languages (for example, Bangla), other types of articles (any review, commentary, correspondence/letter to the editor, viewpoints/opinions, editorials, case studies), and COVID-19 related articles

were excluded from the study as we intended to check the studies conducted in situation to extract the usual research depth and trends of suicide research in Bangladesh.

Outcome variables

Publishing year, methods of the study, summary of the studies, distribution of the authors, cross-country collaboration (inter-country), discussed domains of the study, and funding detail. Affiliated institutions were considered to ascertain the authors’ geographical locations.

Statistical analysis

Descriptive analysis was done to assess the distribution of the studies. No analytical statistical analysis was performed.

Ethical statement

The study was conducted complying with the declaration of Helsinki (1964). As we included the publicly available published articles, no formal ethical approval was sought for this study.

RESULTS

Distribution of the studies

We searched peer-reviewed original papers in PubMed, PMC, Scopus, GS, and BanglaJOL, and for this review, we assessed 44 papers. We included all articles published between 2011 and 2020 (Table 1). Among the 44 studies, three-quarters of the studies (32) were published during the second half of the decade (2016-2020) (Table 1; Table 2).

Applied methods

Among the 44 studies, three were qualitative studies (6.8%), one mixed-method study (2.3%), and the rest were quantitative studies (90.9%) (Table 1). The interview was applied in 16 studies (36.4%), a survey was conducted in seven studies (15.9%), secondary data was analysed in 14 studies (31.8%), news reports were analysed in six studies (13.6%), and one study followed mixed methodology (Table 1). All the studies followed a cross-sectional design; four studies (9.1%) were done prospectively, 11 studies (25%) were done retrospectively, and two studies (4.5%) followed case-control design (Table 1). Among the 44 studies, nine studies involved university students, medical students, and youths; seven studies assessed the

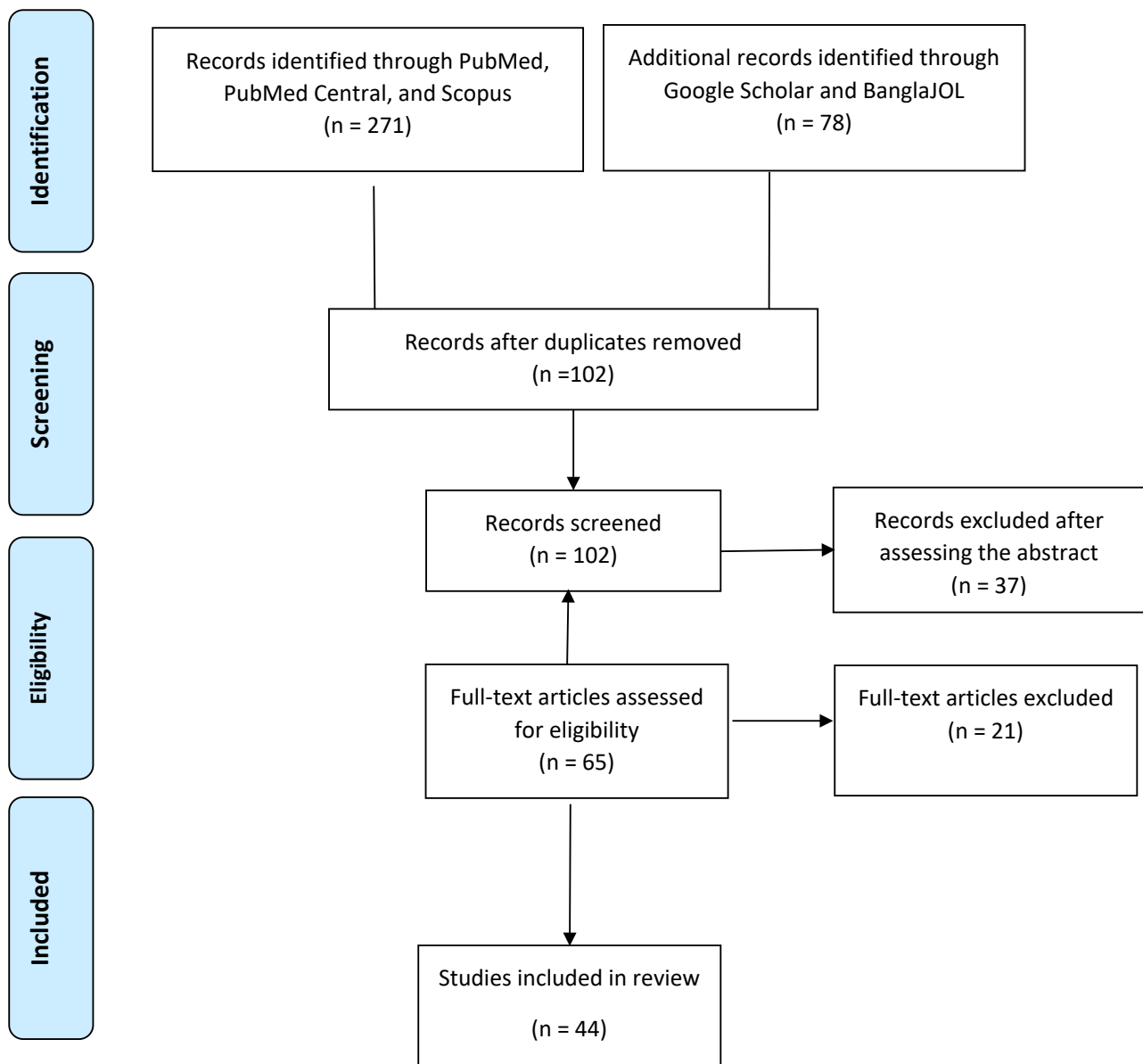


Figure 1: PRISMA 2009 Flow Diagram

hospitalised patients as respondents, and only one study assessed suicidality among the elderly (Table 1).

Domains

Studies have been identified assessing the quality of media reporting (two studies), risk factors by psychological autopsy study (one study), epidemiological aspect of suicide, self-harm, risk factors, trends of poisoning, sociological perspectives, ontological perspectives, masculinity, and suicide, suicide in the elderly (one study), and financial loss due to suicide (one study) (Table

2). Recent studies covering newer aspects are coming out day by day. Studies of the earlier half of the decade (2011-2015) explored epidemiological aspects, while studies in the last five years (2016-2020) assessed the newer topics such as quality of media reporting, psychological autopsy study, perspectives after a nonfatal attempt, sociological perspectives, ontological perspectives, masculinity and suicide, and financial loss due to suicide (Table 2).

Distribution of authors

The majority (86.36%) of the first authorship was noted

Table 1: Summary of the articles.

SN	Study	Methods applied	Sample size	Study design	Study population	Summary
1	Acherjya et al., 2020	Data was collected from hospitalised patients with acute poisoning	474 (213 males; 251 female)	Cross-Sectional	Hospitalised patients with poisoning	Young people (10-29 years), female (52%), students were more affected. Organophosphorous was the most frequently used method (66.7%). Family disharmony (56.1%), emotional liability, affair, sexual abuse, and academic failure were noted as risk factors.
2	Arafat et al., 2021	Face-to-face interviews	200 (100 cases; 100 control)	Case-control psychological autopsy study	Relatives of suicide victims	Psychiatric disorder, life-event, sexual abuse, and past attempts were identified as major risk factors. 61% had psychiatric illness, and 91% faced life events.
3	Arafat et al., 2020a	Retrospective analysis of news report	403 (179 males; 224 female)	Cross-sectional		The mean age was 25.81±11.62 (range: 8-80) years. The majority of the victims were females (55.6%), students (33.3%), urban habitant (69%), and below 30 years of age (53.35%). Hanging was the most commonly used method (76%), and family issues were the most-noted risk factors.
4	Arafat et al., 2020b	Retrospective analysis of Bangla online news reports	199 (94 males; 105 female)	Cross-sectional		The mean age was 26.86±13.60 (range: 9-75) years. Persons aged below 30 years (60%), females (53%), and students (32%) were more affected. Hanging was the most frequently used method of suicide (60%) and the majority of the risk factors were related to familial issues.
5	Arafat et al., 2020c	Prospective newspaper report analysis	327	Cross-sectional		The quality of newspaper reporting of suicide was poor compared to the World Health Organization (WHO) guidelines. Potentially harmful characteristics were mentioned in a high frequency while no initiative was made to educate the general people by reporting the potentially helpful characteristics.
6	Bala et al., 2020	Offline and online survey through paper-based form and Google form	871 (502 males; 369 female)	Cross-sectional	University students	It assessed the suicidal ideation rate (14.5%) among university students. Female students had more mental health issues than the males, which has a strong correlation with suicidal ideation. Students from Dhaka, Mymensingh, and Chittagong were found with higher suicidal thoughts. The authors emphasised setting up counselling centers in all universities for students.
7	Hasan et al., 2020	Structured, self-administered survey	221 (86 males; 135 female)	Cross-sectional	Medical students	It assessed depression, sleep, and suicidal behaviour in medical students. It reported that 17.6% of respondents attempted/planned suicide at least once while studying in medical school.
8	Irish & Murshid, 2020	Data analysis of 2014 Global School-based Health Survey Report	2883	Retrospective	Youth (11-17 years)	The incidence rate of past-year suicidality was 9.3% and attempt 5.8%. The mean age of the respondents was 14.2 years and 60% of the children were female. Bullying was associated with high suicidality and having a close friend was found as a protective factor.
9	Khan et al., 2020a	Data analysis of 2014 Global School-based Health Survey Report	2989	Retrospective	School going adolescents (11-18 years)	The study assessed the prevalence and risk factors for suicidality in school-going adolescents. The prevalence of suicidal behaviour among adolescents was 11.7%. The risk factors included individual psychological factors like loneliness, anxiety, being bullied, having no close friends, and some health risk behaviours.
10	Khan et al., 2020b	Face-to-face interviews	20	Qualitative	Family members/friends of men who died by suicide	Men die by suicide due to the failure of fulfilling the social demands of hegemonic masculinity, namely, not earning enough money to support family, disturbed relationships, sexual impotence or infidelity, and loss of self-esteem and respect.
11	Khan et al., 2020c	Face-to-face interviews	17	Qualitative	Men who had nonfatal attempt (age 18+)	This paper assessed self-reflection after a non-fatal attempt among males of a rural area. Society treats suicide as a feminine act and bullied men as cowards for attempting it. Some of them found their act as a mistake, some found a way to rebuild

continued Table 1: Summary of the articles.

SN	Study	Methods applied	Sample size	Study design	Study population	Summary
						themselves, some tried to take revenge, and the rest escaped from society.
12	Mamun et al., 2020	Class-room based convenient paper-pencil survey	665 (449 males; 216 female)	Cross-sectional	University students	The study revealed the lifetime prevalence of suicidal ideation was 61.1%. Relationship problems, exam failure, economic failure, depression, anxiety, stress, and family disharmony were noted as risk factors.
13	Rahman et al., 2020	Self-reported convenient survey	407 (220 males; 187 female)	Cross-sectional	University students (mean age: 22.8 years; range: 18 to 27 years)	The prevalence of suicidal ideation was 13.8% in the past year. Female sex, fifth-year students, traumatic events, family history of suicide, and depression were noted as risk factors.
14	Sakib et al., 2020	Class-room based convenient paper-pencil survey	955 (488 males; 467 female)	Cross-sectional	University students	The study revealed 47.7% of students had depression and 28.5% had suicidal behaviours in the past year.
15	Arafat et al., 2019	Retrospective analysis of Bangla online news reports	320	Cross-sectional		The quality of eight leading Bangla online news reports of suicide was poor compared to the WHO guidelines. They mentioned potentially harmful characteristics frequently while there was no educative information to prevent suicide.
16	Iqbal et al., 2019	Secondary data analysis from a suicide prevention hotline caller list	14344	Retrospective	Callers to suicide prevention hotline (2013-2018)	60% of callers were within the age range 20-39 years and about 50% were male. Relationship issues, mental illness, and substance abuse were identified as the major risk factors for acute distress.
17	Islam et al., 2020	Face-to-face interviews	426	Cross-sectional	Mothers (15-49 years) with newborn children	64% of the respondents were exposed to physical, psychological or sexual interpersonal violence, 30.8% had suicidal ideation, and 35.2% reported postpartum depressive symptoms. Intimate partner violence was significantly associated with suicidal ideation.
18	Khan et al., 2020	Data analysis from Society for Voluntary Activities (SOVA) for the period 2010-2018	25827	Descriptive analysis of secondary data	Community population	This rural district of Bangladesh showed a higher rate of suicide and suicidal attempts than the global average. Family violence is the most common precipitating factor for women. Poisoning and hanging were the most common methods used for attempting suicide.
19	Uddin et al., 2019	Face-to-face interviews	51 (3 males; 48 female)	Prospective	Patients with self-harm admitted into a tertiary care hospital	Commonly used suicidal agents were sedatives (52.91%) followed by the organophosphorus compound. Major depressive disorder, borderline personality disorder, and schizophrenia were identified as psychiatric morbidities. Coping from a difficult situation, discrimination, loss of closest one, family discord, experience problem with peers, broken-up relationship, problem in conjugal life, quarrel with family, and poverty were identified as risk factors.
20	Akter et al., 2018	Face-to-face interviews	39 (10 males; 29 female)	Cross-sectional	Outdoor hospital patients	The mean age was 25.08± 10.68 (range: 21-51) years. Unmarried females were more prone to self-harm. Most of the patients showed borderline personality disorder as prime psychiatric morbidity, followed by depression. Poisoning was the commonest method of attempts and familial discord was the commonest risk factor.
21	Arafat et al., 2018	Retrospective analysis of online news reports	358	Cross-sectional		Early adult, female, unmarried and students were more prone to suicide. Hanging was the most common method (61%), followed by poisoning (13%). Family issues were the dominant risk factors.
22	Chowdhury et al., 2018	Data analysis of unnatural deaths from the Statistics Division of Bangladesh Police (1996-2014)	210486	Retrospective		After banning class 1 toxic highly hazardous pesticides by WHO in 2000, the pesticide suicide rate reduced by 65% during the study period from 1996-2014. The study found no adverse impact on agriculture in the post-ban period. Also, unemployment, divorce, alcohol misuse didn't impact much on the pesticide suicide rate.

continued Table 1: Summary of the articles.

SN	Study	Methods applied	Sample size	Study design	Study population	Summary
23	Mali et al., 2018	Face-to-face interviews	120 (51 males; 69 female)	Cross-sectional	Outdoor patients at a tertiary teaching hospital with suicidal behaviour	The majority of respondents were females (57.5%), unmarried (53.3%), students (33.3%), and city dwellers (37.5%).
24	Begum et al., 2017a	Interviews	2,476	Cross-sectional	Adolescents and young adults in rural Bangladesh	The study found the lifetime prevalence of suicidal ideation among adolescents was 5%. Females (51%), 18-19 years people were more prone to suicide. Students, unmarried adolescents, unemployed but work in the household had a higher rate of suicide. Living with family was reported as a protective factor.
25	Begum et al., 2017b	Autopsy report analysis of hanging	78 (30 males; 48 female)	Cross-sectional		Among the suicides, there were more females (61.3%) than males and the majority were aged 30 years (73%). The majority of cases were female (61.54%). Emotional, familial, and financial issues were found as major risk factors.
26	Ghani and Chakbarty, 2017	Face-to-face interviews	19	Qualitative	Family members and suicide attempters	This exploratory study described suicide in an ontological category. In the total 19 cases, 12 were classified as egoistic, five as anomic, and two were classified as fatalistic suicides. Poverty, poor economy, less connection with family, a relationship issue, sexual abuse, marital discord, psychic pain were the main motives.
27	Salam et al., 2017	Face-to-face interviews	1.165 million (38 suicide; 57 non-fatal attempt)	Cross-sectional	Community people	This study assessed the burden and risk factors of suicidal behaviour. Married women, adolescents (10-17 years) showed 22 times higher rates of suicide than unmarried persons. Age, marital status, dowry, geographical region were identified as the risk factors for suicide. Hanging was found as the most commonly used method (59%).
28	Shah et al., 2017	Analysis of newspaper reports	271	Prospective		Younger people (below 30 years), females, and rural inhabitants were more among the suicides. Hanging was the most commonly used method (82.9%). Marital and familial discords were the main risk factors.
29	Verma et al., 2017	Interviews	160 (76 males; 84 female)	Cross-sectional	Hospitalised patients after self-poisoning	The cost was about five times to the family than the government's healthcare cost to treat a self-poisoned patient. Agrochemicals are the most used agents for poisoning, and the median duration of hospital stay is two days. Misdiagnosis as organophosphorus poisoning by caregivers increases the cost. Almost 80% of the population borrowed money when they came to hospitals for treatment.
30	Ara et al., 2016	Mixed method	40	Cross-sectional	Community people	The author aimed to describe the overall suicide profile as well as its impact on society. They identified 33.33% of the suicides as egoistic suicide, and 50% of suicides were anomic. The study reported weak social bonds, relationship problems, financial problems, mental psychosis as the risk factors.
31	Pervin and Ferdowsh, 2016	Survey by purposive sampling	112 (51 males; 61 female)	Cross-sectional	University students (19-25 years)	The mean age was 22.03 years, and all the respondents were of middle socioeconomic status. There was a strong positive correlation between suicidal ideation and depression, loneliness, hopelessness.
32	Roy et al., 2016	Face-to-face interviews	101 (48 males; 53 female)	Cross-sectional	Patients with suicidal attempt who were admitted into a tertiary care hospital	There were more females, unmarried individuals, and young people below 20 years among the attempters. Poisoning was the most frequently used method (56%) and 65% of patients had psychiatric disorders. Domestic quarrel, relationship issues, medical illness, exam failure were noted as risk factors.

continued Table 1: Summary of the articles.

SN	Study	Methods applied	Sample size	Study design	Study population	Summary
33	Wahlin et al., 2015	Face-to-face interviews	625 (280 males; 345 female)	Cross-sectional	Rural elderly people	Overall, 23% of the respondents had suicidal thoughts, and 70% of women were depressed. Female, illiterate, single respondents showed a higher risk for both depression and suicidal thoughts. Living with a child and having strong contact were found as protective factors.
34	Ali et al., 2014	Analysis of autopsy reports, police reports, and interview with relatives	334 (231 males; 103 female)	Descriptive	Suicide deaths by hanging	The mean age was 28.86 years, the majority were male (69.2%), married (56.0%), middle-income group (78.1%), and illiterate. Family related issues were identified as a major risk factor.
35	Talukder et al., 2014	Data extracted from medicolegal autopsy reports of a forensic medicine department	100 (18 males; 82 female)	Cross-sectional descriptive study		Among the 100 suicides by hanging, 82 were females. The mean age was 22.2 years. Marital and family discords were identified as the major risk factors.
36	Choudhury et al., 2013a	Data extracted from medicolegal autopsy reports	20	Retrospective		The highest frequency of suicide was found among people aged 20-35 years and of a lower socioeconomic group. Mental pressure, economic stress, and environmental issues were noted as risk factors.
37	Chowdhury et al., 2013b	Interviews	100	Cross-sectional	Substance abusers seeking treatment	Self-harm is common in substance use disorder patients. Self-harm was done mainly by cutting, burning, scratching, stabbings.
38	Mashreky et al., 2013	Secondary data analysis from the Bangladesh Health and Injury Survey	171,366 (61 suicide)	Cross-sectional	Household-level respondents	The suicide rate was 7.3 per 100,000 per year. Adolescent females, elderly, very poor, and illiterate people were at risk. Poisoning was found as the most frequent method of suicide.
39	Reza et al., 2013	Face-to-face interviews	230 (113 cases; 117 control)	Case-control study	Close family members of cases and controls	This research paper investigated the risk factors for suicide and self-harm in rural Bangladesh. It revealed that Married females with younger ages (20-29 years) and low-income unitary families were more vulnerable. The problem of love affairs, personal problems, economic hardship were found as risk factors.
40	Sarkar et al., 2013	Analysis of medical reports of patients with acute poisoning	956 (493 males; 463 female)	Retrospective	Hospitalised adult patients admitted due to poisoning	The article explored the frequency and outcome of acute pharmaceutical and chemical poisoning cases in Northern Bangladesh. It revealed that most of the people took organophosphate compound (OPC) as a poison (73.5%) and family disharmony was reported as the main risk factor (92.3%). Most of the patients were aged between 18-40 years.
41	Feroz et al., 2012	Face-to-face interviews	12422 (16 suicide; 19 self-harms)	Cross-sectional	Community people	In this community-based survey in a rural area of Bangladesh, the suicide rate was found 128.8 per 100,000 populations, and the median age was 30.4 years. Females died more than males and more married persons than unmarried. Family discord, substance abuse, long-term morbidity, failure in the examination were the risk factors. Hanging was the most commonly used method.
42	Chowdhury et al., 2011	Analysis of medical reports of patients with acute poisoning	1903 (1012 males; 891 female)	Retrospective	Hospital admitted patients	The article mentioned the pattern of acute poisoning in a hospital over four years. The most commonly used toxic compound was OPC and the death rate was highest in OPC poisoning (52.1%). The poisoning cases were progressively decreased during the observed years.
43	Hossain et al., 2011	Data extracted from medicolegal autopsy reports of a forensic medicine depart	970 (378 males; 592 female)	Cross-sectional		There were more females than males among the suicides in the group of completed suicide victims and hanging was the most frequently used method (59%).
44	Howlader et al., 2011	Data analysis of hospitalised poisoning cases	100 (64 males; 36 female)	Prospective	Hospitalised patients after taking poisons	Sedatives were the most commonly used poison, followed by the organophosphorus compound. Poverty, familial disharmony, failure in affairs and exams, sexual abuse, and chronic illness were the common risk factors.

Table 2: Domains of empirical studies of suicide in Bangladesh during 2011-2020.

SN	Study	Domain
1	Acherjya et al., 2020	Demography, psychological aspect, pattern, and treatment outcome of poisoning
2	Arafat et al., 2021	Risk factors for suicide by case-control psychological autopsy
3	Arafat et al., 2020a	Demography, methods, and risk factors of suicidal behaviours
4	Arafat et al., 2020b	Demography, methods, and risk factors of suicidal behaviours
5	Arafat et al., 2020c	Quality of media reporting of suicide
6	Bala et al., 2020	Suicidal ideation among university students
7	Hasan et al., 2020	Depression, sleeping pattern and suicidal behaviours among medical students
8	Irish & Murshid, 2020	Suicidal behaviours in youths
9	Khan et al., 2020a	Suicidal behaviour among school-going adolescents
10	Khan et al., 2020b	Qualitative assessment of the relationship between masculinity and suicide
11	Khan et al., 2020c	Perceived perspectives of males after a non-fatal attempt
12	Mamun et al., 2020	Suicidal ideation and associated risk factors among university students
13	Rahman et al., 2020	Suicidal ideation among university students
14	Sakib et al., 2020	Depression and suicidal behaviour among university students
15	Iqbal et al., 2019	Characteristics of callers of a suicide prevention hotline
16	Islam et al., 2019	Association of intimate partner violence and postpartum suicidal ideation
17	Khan et al., 2019	Epidemiology of suicidal behaviour in a district
18	Uddin et al., 2019	Risk factors for self-harm
19	Arafat et al., 2019	Quality of media reporting of suicide
20	Akter et al., 2018	Psychiatric morbidity and motives of self-harm
21	Arafat et al., 2018	Demography, methods, and risk factors
22	Chowdhury et al., 2018	Effect of pesticide ban on the method of suicide
23	Mali et al., 2018	Demography of suicidal ideation
24	Begum et al., 2017a	Suicide ideation among adolescents and young adults in rural Bangladesh
25	Begum et al., 2017b	Demography of suicides by hanging
26	Ghani and Chakbarty.,	Motives, reality, and language of suicide based on ontological categories
27	Salam et al., 2017	Epidemiology of fatal and non-fatal suicidal behaviour in rural Bangladesh.
28	Shah et al., 2017	Demography and risk factors of suicide
29	Verma et al., 2017	Financial costs to patients and health services of treating patients with poisoning
30	Ara et al., 2016	Sociological analysis of suicide
31	Pervin and Ferdowsh, 2016	Relationship of suicidal ideation with depression, loneliness, and hopelessness among university students
32	Roy et al., 2016	Demography and psychiatric morbidities of suicide attempters
33	Wahlin et al., 2015	Depression and suicidal thoughts among elderly
34	Ali et al., 2014	Epidemiology and risk factors of suicide
35	Talukder et al., 2014	Demography, risk factors, and pattern of suicidal hanging
36	Choudhury et al., 2013a	Trends of suicidal death at a tertiary care hospital
37	Chowdhury et al., 2013b	Substances used and self-harm
38	Mashreky et al., 2013	Epidemiology of suicide
39	Reza et al., 2013	Risk factors for suicide and self-harm in a rural area
40	Sarkar et al., 2013	The spectrum of acute pharmaceutical and chemical poisoning
41	Feroz et al., 2012	Epidemiology of suicidal behaviour in a selected rural area
42	Chowdhury et al., 2011	Trends of poisoning in the southern part of Bangladesh
43	Hossain et al., 2011	Methods of suicide
44	Howlader et al., 2011	Changing trends of poisoning

from Bangladesh and rests were noted from the USA (two), Sweden (two), UK (one), and Australia (one) (Table 3). The mean number of authors per paper was 5.22, ranging from 2-14. SMY Arafat has published the maximum number of empirical studies (six) on several aspects of suicide in Bangladesh as the first author. About 40% (18) of the papers had a collaboration with authors from other countries, and about 18.2% (eight) of the papers were externally funded either partially or fully (Table 3).

A summary (methods of study, sample size, study design, study population, and key findings) of the articles has been mentioned in table 1, domains of the studies were mentioned in table 2, and bibliometrics summary (number of authors in an article, country of the first and corresponding author, cross-country collaborations, and funding status) was mentioned in table 3. Overall, a few empirical studies have been conducted in the last decade in Bangladesh despite an increased rate that has been noted in recent years (2017-2020). There is a dearth of studies with advanced methodology and targeting the interventions. Almost certainly, funding for suicide research was inadequate.

DISCUSSION

We aimed to assess the empirical studies on suicide during the last decade (2011-2020) in Bangladesh. We searched PubMed, PMC, Scopus, GS, and BanglaJOL and assessed 44 original articles (Figure 1). The paper publishing year, applied methods, key findings, distribution of the authors, inter-country collaboration, and research funding were also identified (Table 1, Table 2).

Main findings

The study revealed that the mean number of studies per year was 4.4, signifying that there is little attention to suicide as a preventable public health problem. Only three studies (6.8%) followed the qualitative design, and one study (2.3%) followed a mixed-method approach. Only two studies (4.5%) followed the case-control study design, and only one study (2.3) explored suicidal behaviour in old age in Bangladesh. We couldn't find any interventional study targeting the development and/or assessment of suicide prevention strategies in Bangladesh. Also, no study was identified on postvention. These findings identify the obvious gap in the qualitative research, interventional studies, identification of risk factors, and epidemiology of geriatric suicide in Bangladesh.

This review revealed that nine studies (20.5%) studies assessed the different aspects of youth suicide, signifying

that researchers have started shedding some light on the suicidal behaviour among students, and teenage boys and girls. Adolescent suicide is a global public health issue and it is the leading cause of death among children aged 10-19 years in Bangladesh (Mashreky et al., 2013). Although suicide rates have fallen dramatically in Europe between 1990 and 2009, Kölves and De Leo (2016) found that there has been a substantial rise in suicide rates in South America in teens, aged 15-19 years, which is surprisingly consistent with the increasing incidence of suicide among Bangladeshi teens as argued by Irish and Murshid (2020).

About one third (31.81%) of the studies analysed the secondary data such as medicolegal autopsy reports, global school-based health survey data, local non-governmental organisation data, and police statistics, and 13.61% of the articles assessed the media reports (Table 1). Getting data with good scientific quality to conduct suicide research has been challenging in Bangladesh. Therefore, a prudential interpretation is warranted while assessing the studies conducted from secondary data and news reports. As a result, studies should be planned to target the large-scale epidemiological data. Only two case-control studies assessed the risk factors for suicide; however, the studies were conducted based on a specific region i.e., one study done in the urban area (Arafat et al., 2021), while the other was done in a rural area (Reza et al., 2013). The first psychological autopsy study revealed that mental illness, major life event, sexual abuse, and past attempt as major risk factors. 61% of the suicides had a mental disorder, and 91% faced life events (Arafat et al., 2021). Repeated studies from various settings, samples, and methods revealed that early age (below 30 years) female gender, and students were more vulnerable than other counterparts (Arafat et al., 2020a, b; Shah et al., 2017; Salam et al., 2017; Iqbal et al., 2019; Khan et al., 2020d; Uddin et al., 2019; Akter et al., 2018; Mali et al., 2018; Begum et al., 2017b; Roy et al., 2016; Ali et al., 2014). Most of the risk factors prevail within the family, such as marital discord, familial disharmony, affair-related issues, extra- and premarital affairs, and poverty (Arafat et al., 2021; Arafat et al., 2020a, b; Arafat, 2019; Shah et al., 2017; Feroz et al., 2012; Reza et al., 2013; Salam et al., 2017) (Table 1).

We identified two studies (4.5%) that assessed the quality of newspapers reporting suicide in Bangladesh (Arafat et al., 2019; Arafat et al., 2020c). The quality of media reporting was found poor compared to the WHO reporting guidelines, and there was no attempt to educate the general population. Niederkrotenthaler et al. (2020) found that there is a strong association between suicide reports in mass media and subsequent numbers of suicides. Reporting of suicidal deaths by celebrities tends

Table 3: Bibliometric summary of the articles.

SN	Study	No. authors	Country of the 1st author	Country of corresponding author	Cross-country collaboration (no. of countries of authors' affiliation)	Funding details
1	Acherjya et al., 2020	5	Bangladesh	Bangladesh		None
2	Arafat et al., 2021	5	Bangladesh	Bangladesh	Yes (3)	Partially funded by the Bangladesh Association of Psychiatrists.
3	Arafat et al., 2020a	3	Bangladesh	Bangladesh		Self-funded
4	Arafat et al., 2020b	3	Bangladesh	Bangladesh		None
5	Arafat et al., 2020c	5	Bangladesh	Australia	Yes (5)	Study was not funded. However, the corresponding author was funded.
6	Bala et al., 2020	4	Bangladesh	Bangladesh		None
7	Hasan et al., 2020	13	Bangladesh	Bangladesh	Yes (3)	None
8	Irish & Murshid, 2020	2	USA	USA		None
9	Khan et al., 2020a	6	Bangladesh	Bangladesh	Yes (2)	None
10	Khan et al., 2020b	5	Bangladesh	Bangladesh	Yes (2)	None
11	Khan et al., 2020c	3	Bangladesh	Bangladesh	Yes (2)	None
12	Mamun et al., 2020	4	Bangladesh	UK	Yes (2)	None
13	Rahman et al., 2020	5	Bangladesh	Bangladesh	Yes (2)	None
SN	Study	No. authors	Country of the 1st author	Country of corresponding author	Cross-country collaboration (no. of countries of authors' affiliation)	Funding details
14	Sakib et al., 2020	10	Bangladesh	Bangladesh	Yes (3)	None
15	Arafat et al., 2019	3	Bangladesh	Bangladesh		Self-funded
16	Iqbal et al., 2019	3	USA	USA	Yes (2)	None
17	Islam et al., 2019	6	Australia	Australia	Yes (3)	Partially funded by the Joint Donors Technical Assistance Fund at the Ministry of Health and Family Welfare, Bangladesh.
18	Khan et al., 2019	5	Bangladesh	Bangladesh	Yes (2)	None
19	Akter et al., 2018	3	Bangladesh	Bangladesh		Self-funded
20	Uddin et al., 2019	3	Bangladesh	Bangladesh		None
21	Arafat et al., 2018	3	Bangladesh	Bangladesh		Self-funded
22	Chowdhury et al., 2018	8	Bangladesh	UK	Yes (3)	Economic and Social Research Council (U.K)
23	Mali et al., 2018	3	Bangladesh	Bangladesh		None
24	Begum et al., 2017a	6	Sweden	Sweden	Yes (2)	Partially funded "Career Planning & Human Resource Development Initiative" and the Ministry of Science and Technology, Bangladesh.
25	Begum et al., 2017b	8	Bangladesh	Bangladesh		None
26	Ghani and Chakbarty., 2017	2	Bangladesh	Bangladesh		None
27	Salam et al., 2017	8	Bangladesh	Bangladesh	Yes (2)	Bloomberg Philanthropies
28	Shah et al., 2017	3	Bangladesh	Bangladesh		Suicide Prevention Clinic, Bangabandhu Sheikh Mujib Medical University, Bangladesh.
29	Verma et al., 2017	5	UK	UK	Yes (4)	None

Table 3: Bibliometric summary of the articles.

SN	Study	No. authors	Country of the 1st author	Country of corresponding author	Cross-country collaboration (no. of countries of authors' affiliation)	Funding details
30	Ara et al., 2016	3	Bangladesh	Bangladesh		None
31	Pervin and Ferdowsh, 2016	2	Bangladesh	Bangladesh		None
32	Roy et al., 2016	7	Bangladesh	Bangladesh		None
33	Wahlin et al., 2015	5	Sweden	Sweden	Yes (3)	DFID, UK, the Swedish Medical Research Council & SIDA, and Karolinska Institute.
34	Ali et al., 2014	7	Bangladesh	Bangladesh		None
35	Talukder et al., 2014	6	Bangladesh	Bangladesh		None
36	Choudhury et al., 2013a	5	Bangladesh	Bangladesh		None
37	Chowdhury et al., 2013b	7	Bangladesh	Bangladesh		None
38	Mashreky et al., 2013	3	Bangladesh	Bangladesh		UNICEF Bangladesh
39	Reza et al., 2013	14	Bangladesh	Bangladesh		None
40	Sarkar et al., 2013	6	Bangladesh	Bangladesh		None
41	Feroz et al., 2012	7	Bangladesh	Bangladesh		None
42	Chowdhury et al., 2011	6	Bangladesh	Bangladesh		None
43	Hossain et al., 2011	3	Bangladesh	Bangladesh		None
44	Howlader et al., 2011	7	Bangladesh	Bangladesh		None

to raise the rate of suicides by 8-18 per cent in the next 1-2 months, and suicide method knowledge was correlated with an increase in suicide risk of 18-44 per cent by the same method.

The review revealed that 81.8% of articles had no external funding, which is an important area to follow up. Other constraints such as infrastructure, expert human resources, quality data, and limited funding are fundamental reasons for the status quo.

What is already known

Suicide is a neglected public health problem in Bangladesh where quality data is a fundamental challenge. Criminal legal status, social stigma and a lack of a central database are some of the reasons for under-reporting. There is no central suicide prevention strategy even though some initiatives have been started sparsely. Fortunately, an increased number of articles has been publishing in recent years.

What this review adds

The study comprehensively reviewed the empirical studies published in the last decade (2011-2020). It identified the current research domains, funding status, collaborations, and potential research gaps.

Implications of this study results

Currently, Bangladesh has no central suicide prevention strategy. An adequate amount of research exploring the several aspects of suicide in a country is necessary (Arafat, 2020). This study identified that there was no nationwide epidemiological study, interventional study, and study on postvention in the last decade in Bangladesh. Researchers had little funding support. Stakeholders should ensure immediate attention to fill the gaps so that the national suicide prevention strategy could be supported by locally available evidence.

Strengths of the study

The study reviewed the full-length original articles on suicide in Bangladesh in a decade which would help identify the research gaps while considering the national suicide prevention programme.

Limitations

The articles extraction was done by a single individual (first author). Articles published in only the English language were included. Some papers excluded as full texts were not available. Some papers might have been skipped due to their unavailability online and in journal aggregating sites,

as some journals and past issues have no online presence.

CONCLUSIONS

Suicide has got little attention as a public health problem in Bangladesh. Despite a growing number of studies, Bangladesh has no nationwide, longitudinal, and interventional study on suicide and suicide prevention. Quality data is a fundamental challenge in the country as there is no dedicated suicide surveillance. There are inadequate funds and poor political commitment to suicide prevention and research projects on suicidal behaviour in Bangladesh. Studies on postvention and interventional studies are yet to be started. Proper attention of all the stakeholders is warranted to improve the status quo.

AUTHORS' CONTRIBUTION

Conception & design: SMY Arafat.

Acquisition of data: SMY Arafat, F Hussain, ZT Itu.

Data analysis: SMY Arafat, F Hussain.

Drafting, critical revision and final approval of the manuscript: All authors.

DECLARATION OF ETHICS

The study was conducted complying with the declaration of Helsinki (1964). As we included the publicly available published articles, no formal ethical approval was sought for this study.

CONFLICT OF INTEREST

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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