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Suicidal behaviours and associated factors among Bangladeshi medical students: a systematic review and meta-analysis (2000–2024)

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ABSTRACT

Objectives Suicidal behaviours are common among medical students, and the prevalence might vary across various regions. Even though various systematic reviews have been conducted to assess the suicidal behaviours among medical students in general, no review has ever explored or carried out a sub-analysis to show the burden of suicidal behaviours among Bangladeshi medical students.

Design This is a systematic review and meta-analysis of prevalence studies among Bangladeshi medical students. The review applied truncated and phrase-searched keywords and relevant subject headings for study identification using Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and Meta-analysis of Observational Studies in Epidemiology (MOOSE) guidelines.

Data sources PubMed (Medline), Scopus, PsycINFO and Google Scholar databases were searched between January 2000 and May 2024.

Eligibility criteria for selecting studies The designed study included cross-sectional, case series, case reports and cohort studies of Bangladeshi medical students reporting suicidal behaviours (suicidal ideation, suicidal planning or suicidal attempts). Only freely accessible, full-text articles in English were included for analysis.

Data extraction and synthesis Study screening, data extraction and methodological assessment were performed by two independent reviewers. Risk of bias was assessed using the Joanna Briggs Institute critical appraisal tool. A random-effects meta-analysis model was conducted to pool prevalence rates, complemented by narrative synthesis. Heterogeneity was assessed using the I^2 statistic.

Results Data were obtained from 6 eligible studies, including 1625 medical students (691 male) of Bangladesh. The pooled prevalence of lifetime suicidal behaviours was 25%, for suicidal ideation (95% CI: 14% - 37%, I^2=91%; p<0.01), 6% for suicidal plan (95% CI: 2% - 12%, I^2=91%; p<0.01), and 8% for suicidal attempt (95% CI: 1% - 17%, I^2=96%; p<0.01). The factors associated with suicidal ideation were female gender, depression, familial suicidal history and drug addiction. Only depression and drug addiction were significantly associated with suicidal attempts, while hanging was the most attempted method.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This systematic review and meta-analysis comprehensively searched articles not only to report the prevalence of suicidal behaviours but also incorporated studies to explore the associated factors and methods that were used for suicide among Bangladeshi medical students.

⇒ A rigorous methodology outlined in the Cochrane Handbook, ensuring that our findings align with the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

⇒ Only peer-reviewed articles that reported original data specifically on Bangladeshi medical students were included in this analysis.

⇒ Many of the studies were based on self-reported data, which could introduce potential methodological biases.

⇒ Additionally, the overall quality of the individual studies may limit the strength of the conclusions we draw.

Conclusions Suicidal behaviours particularly, suicidal ideation, are high among Bangladeshi medical students. However, very few studies were done in this country to quantify the burden and its associated factors.

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INTRODUCTION

Suicidal behaviour is a broad term that encompasses three main categories: (1) suicidal ideation (SI), which refers to thoughts of willing to end one's life; (2) suicidal plans (SPs), which involve formulating a specific method to die and (3) suicide attempts (SAs), which are acts of self-harm with at least some intent to die, resulting in non-fatal outcomes.[1] According to the WHO, ~77% of suicides occur in low-income and middle-income countries (LMICs).[2] In 2019, suicide rates in Southeast Asia were 10.2 per 100 000 population, higher than the global average of 9.0 per 100 000, largely due to population

growth and demographic structures. Among individuals ageing 15–29 years, suicide is the fourth leading cause of death globally, taking more lives than HIV, malaria, breast cancer and even homicide.[3]

As per the 2022 Education Statistics of Bangladesh, 174 888 students enrolled in 826 institutions, with 28.93% attending medical colleges and 4.11% pursuing dental studies, and approximately two-thirds of these students were female. Bangladesh has emerged as a hub for medical education in Southeast Asia.[4] However, medical students worldwide have long been found to have suicide rates 3–5 times higher than the general population.[5] Systematic reviews and meta-analysis have reported that, suicidal behaviours among medical students range from 3.8% to 18.7%, compared with 9.0% to 9.7% among general university students.[6] Bangladeshi medical students, in particular, exhibit concerning rates of SI, ranging from 23.8% to 27.4%.[7] In comparison, medical students in Austria, Turkey, Pakistan and China reported varying rates of SI and SA within a year, ranging from 0.3% to 4.8%.[8 9]

Several factors have contributed to the elevated risk of suicide among medical students globally, including the competitive academic environment, high expectations from family and peer group including the academic faculty and the onset of psychiatric disorders. However, many of the disorders manifest around the age of 24 years, during the peak of medical training. In Bangladesh, studies have shown that 33.5% of medical students experienced poor mental health, while 39.1% suffered from depression.[10] A web-based study reported that up to 80.2% of Bangladeshi medical students have moderate to severe depressive symptoms.[11] Similar trends are also observed in other countries, while depression rates among medical students in China are about 32.74%, in Turkey at 39%, in Nepal at 29.9% and in Egypt as high as 65%. Depression is one of the most significant influential factors contributing to suicidal behaviours around the world.[12 13]

Throughout the world, medical education system and its curriculum are widely acknowledged as being inherently challenging and at the same time demanding. Students often experience academic pressure, excessive expectations, workplace stress, burnout and struggle to balance their studies with personal and financial commitments.[14] Additional factors contributing to suicidal behaviours among medical students include chronic stress, poor mental health, academic pressure, familial expectations, depression, relationship status, substance abuse, online addiction, sleep disturbances, thoughts of dropping out and experiences of physical or sexual assault. Family dynamics, such as parenting style and family history of suicide or mental illness, also play a significant role.[15–17]

One of the major challenges in suicidology is the under-reporting of suicidal cases, which complicates efforts to accurately estimate suicide rates among medical students.[18] Although several studies have explored suicidal behaviours among Bangladeshi medical students, no meta-analysis has been conducted. While research on suicidal behaviours in Bangladesh exists, a comprehensive analysis focusing specifically on the factors contributing to these behaviours among medical students is still lacking. This systematic review and meta-analysis aims to address this gap by examining the prevalence of suicidal behaviours, associated factors and methods of SAs among medical students in Bangladesh.

METHODS
Study design
The systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines[19] and the Meta-analysis of Observational Studies in Epidemiology (MOOSE) guidelines for systematic review and meta-analysis.[20] The review was prospectively registered in PROSPERO (CDR 42023493595). The methods used in this study were previously described in our published protocol.[4]

Review question
The research question was formulated using the Joanna Briggs Institute (JBI) mnemonic, CoCoPop (Condition, Context and Population).[1] In this case, the condition was suicidal behaviours (SI, SP and SA), the context was Bangladesh and the population consisted of Bangladeshi medical students. The research question was 'What is the prevalence of suicidal behaviours (SI, SP and SA) and associated factors among medical students of Bangladesh?'

Search strategies
A comprehensive search strategy was developed in consultation with an expert systematic reviewer and tailored for selected bibliographic databases in combination with Medical Subject Headings (MeSH), keyword terms and filters (figure 1) using the VOSviewer software tool visualising bibliometric networks.[21] The search strategy for different databases is outlined in table 1, which summarises the key search terms for population and outcome. Only studies published in English were considered for inclusion in the meta-analysis.

The research team conducted a comprehensive search across Medline (PubMed), Scopus, PsycINFO and Google Scholar, using targeted search terms related to suicidal behaviours and Bangladeshi medical students. To refine the search results and ensure relevance, specific database filters (eg, date, language and free full text) were applied accordingly. The search focused on suicidal behaviours among medical students in Bangladesh, including all ethnicities and genders, as well as students from various programmes such as Bachelor of Medicine, Bachelor of Dental Surgery, undergraduate medical students, intern doctors, preclinical students, clinical students, resident or non-resident medical graduate trainees. The exposure of interest was being a medical student, with no comparator group. The primary outcome was to assess the prevalence of suicidal behaviours and associated factors, while the
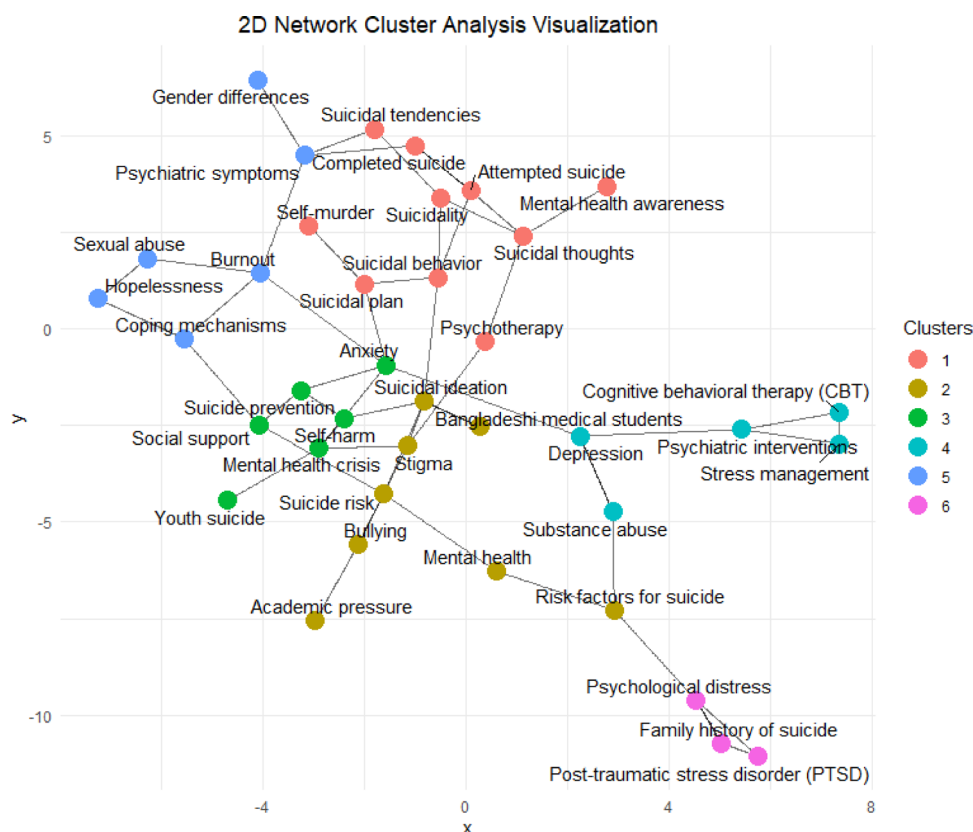
Figure 1 Cluster analysis showing searched keywords from the PubMed database.

secondary outcome focused on methods of suicide, such as hanging and poisoning, among Bangladeshi medical students.

Inclusion and exclusion criteria

The study included all empirical, full-text studies published in English between 1 January 2000 and May 2024, ensuring a comprehensive analysis of recent research. Eligible studies encompassed cross-sectional studies, case series, case reports and cohort studies involving human participants. Review papers, protocols, books, chapters, preprints, meeting abstracts, commentaries, letters and editorials were excluded. Additionally, studies without full-text access, non-English publications, studies on university students not specify the exact number of medical students with suicidal behaviours, and any studies published before 2000 were excluded.

Table 1 Key search terms used to develop the search strategy

Population (P)	Outcome (O)
'Bangladeshi medical students'	'Suicidal behavior' 'Suicidality'
	'Suicidal plan' 'Self-murder'
	'Suicidal ideation' 'Completed suicide'
	'Suicidal thoughts' 'Attempted suicide'

PICO: P (Population), I (Intervention), C (Comparison), O (Outcome) Framework

Non-medical students and medical students outside Bangladesh were also not included in this review.

Study selection procedure

A total of (N=190) papers were initially identified and imported into EndNote V.21.4 to remove duplicates. After eliminating (n=7) duplicates and (n=4) review papers, commentaries or letters, two independent team members (IA, SS) screened the remaining papers based on title, abstract and whether they reported any suicidal behaviours. Of these, (n=151) papers did not meet the inclusion criteria. Seven studies focused on healthcare students which lack specific data on suicidal behaviours among medical students, and eleven studies reported suicide cases among medical students outside Bangladesh. However, the full text of one study was inaccessible. As a result, only five studies were included for analysis. The five available studies[7 10 22–24] were assessed for quality check, using the JBI checklist for prevalence studies, as applied in other reviews.[1] Furthermore, one additional study was included through citation tracking.[25] All six studies were included in the final synthesis. For further details, refer to the PRISMA 2020 flow chart (figure 2).

Data management and extraction

A predesigned checklist created in Microsoft Excel spreadsheet (Microsoft, Washington, USA) was used to collect the following information: first author name, title, year of publication, abstract, study design (cross-sectional, cohort or case series), quality assessment scores based on the JBI
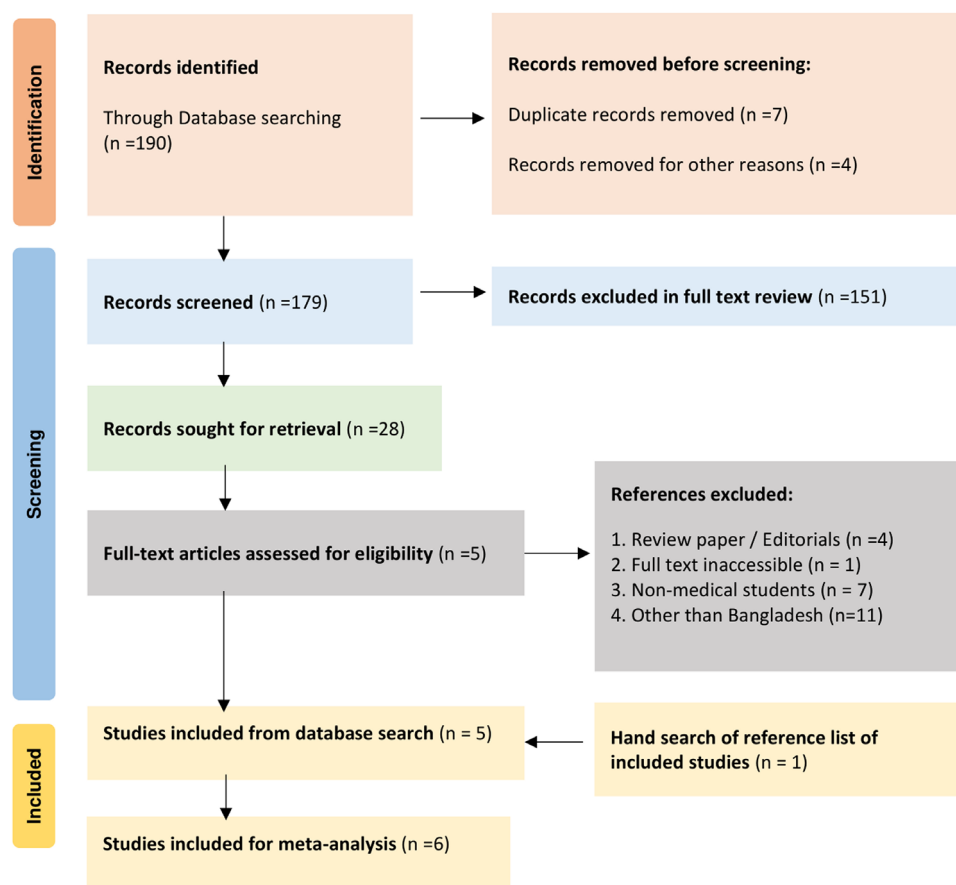
Figure 2 PRISMA flow diagram of study selection process. PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses).

checklists, countries, universities, student types (preclinical, clinical, undergraduate, postgraduate and interns), year of data collection, participant ages, number of male and female participants, number of students per year, and the number of students exhibiting any suicidal behaviours (including SI, SP, SA). The checklist also extracted information on the tools or questions used to assess suicidality, factors contributing to suicidal behaviours, reasons for SAs, methods employed for suicidal behaviours (SI, SA, SP), location of suicides or attempts, sources of weapons used, family history of SAs or completions and family history of mental illness (eg, depression, anxiety).

Risk of bias evaluation and quality assessment of included papers

The JBI appraisal checklist was used to evaluate the quality of the study.[26] The checklist uses a 4-point scale with the responses 'no', 'yes', 'unclear' and 'not applicable' for the following questions. This system was used to assess the risk of bias and the quality of the included papers, using the following mentioned criteria: (1) the suitability of the review question and inclusion criteria; (2) the search strategy and sources; (3) the appropriateness of the apraising studies; (4) the subject and setting description of data extraction; (5) the description of the publication bias and independent review process that was identified; (6) the validity and reliability of the methods

used to screen for suicidal behaviours; (7) the adequate statistical analyses, methods and (8) the response rate of search directives and recommendations. Each study was scored from 0 to 11 points, with 1 point awarded for each 'yes' response. Studies scoring 4 or higher were deemed to be of good quality, with scores categorised as follows: 4–7 for moderate quality and 8–11 for high quality. The quality assessment results are summarised in table 2. This scoring system was used to assess the risk of bias and overall quality of the included studies.

Patients and public involvement

The study did not involve direct patient and public participation in the design, conduct or reporting of this systematic review and meta-analysis.

Data analysis

Statistical analyses were performed using Microsoft Office 2016 (Microsoft, Washington, USA) and R statistical package V.4.3.2 with its in-built meta-packages. Descriptive statistics and qualitative narrative analyses summarised individual study and participant characteristics. A random effects meta-analysis was conducted using R's built-in meta-command to calculate the pooled prevalence of suicidal behaviours based on the number of students exhibiting such behaviours. The model was chosen to generalise findings beyond the included

Table 2 JBI critical appraisal scores for included studies

Included studies	Study designs	JBI overall appraisal scores
Mamun et al, 2020[23]	Retrospective study	7/11
Arafat et al, 2022[24]	Cross-sectional study	8/11
Chomon et al, 2022[7]	Cross-sectional study	9/11
Hasan et al, 2022[10]	Cross-sectional study	9/11
Mozaffor et al, 2022[22]	Cross-sectional study	9/11
Tareq et al, 2020[25]	Cross-sectional study	8/11

JBI critical appraisal tool was assessed out of 11 checklists to assess the quality of prevalence studies based on checklists for systematic reviews and research synthesis
JBI, Joanna Briggs Institute.

studies, as it treats the studies as random samples from a larger population.[27] Heterogeneity among studies were assessed using Cochran's Q statistic and the I^2 statistic, with an $I^2 > 75\%$ indicating significant heterogeneity.

Forest plots illustrated the pooled prevalence, while funnel plots visually assessed potential publication bias complemented by Egger's test. A $p<0.05$ in Egger's test indicated significant publication bias. For factors associated with suicidal behaviours, a random effects meta-analysis was performed when at least two studies provided data, estimating the overall effects of these factors using ORs and corresponding CIs. Log ORs were analysed and then back-transformed for easier interpretation. Two-tailed p values were considered statistically significant if less than 0.05. Results for associated factors with suicidal behaviours were summarised and tabulated for clarity.

RESULTS

Characteristics of studies, study participants

A total of 190 records were identified through the electronic databases and manual searches, of which 6 studies met the predefined eligibility criteria, encompassing 1625 medical students from both public/government and private medical colleges in Bangladesh. These studies were published between 2013 and 2020. Notably, only one study was conducted during the COVID-19 pandemic, using a web-based survey method. As shown in online supplemental table 1, a higher proportion of female medical students were observed across the 6 studies
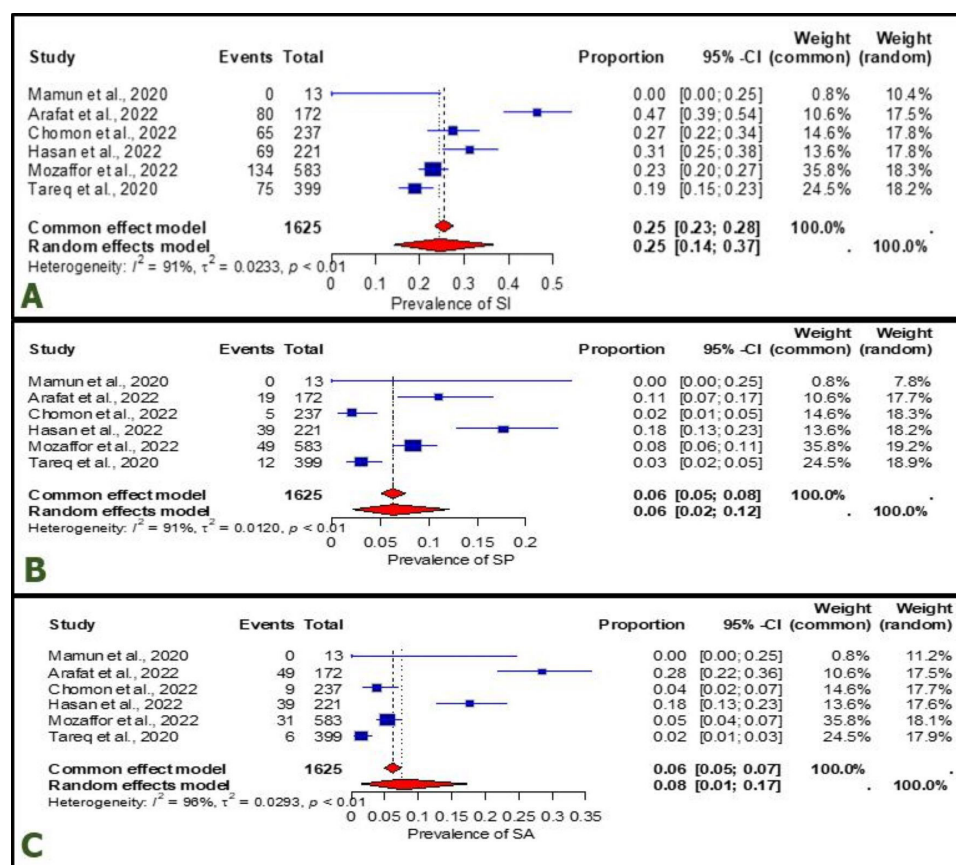

Figure 3 (A) Forest plot showing pooled prevalence of suicidal ideation (SI) among Bangladeshi medical students. (B) Forest plot showing the pooled prevalence of suicidal plans(SP) among Bangladeshi medical students. (C) Forest plot showing pooled prevalence of suicidal attempt (SA) among Bangladeshi medical students.

reporting female gender predominance (913 female vs 691 male students). The pooled mean age of the participants, based on studies that reported this measure, was 21.77 years (SD±1.71 years). Among the 1625 students, the highest representation was from the final-year medical students (n=318). Marital status was documented in four studies, revealing that 54 out of 1213 students were married. Additionally, family history data extracted from four studies revealed that among 755 students, 49 had reported a previous family history of suicide, while 139 out of 1213 students had relatives with a history of mental illness.

Tools used for the assessment of suicidal behaviours

Among the six papers, the tools/instruments used to assess suicidal behaviours included the Bangla Literacy of Suicide Scale (LOSS-B), the Bangla Stigma of Suicide Scale (SOSS-B),[24] the Beck Depression Inventory-II (BDI-II),[7 25] Item 9 of the nine-item Patient Health Questionnaire (PHQ-9)[10 22] and Goldberg's General Health Questionnaire (GHQ-28)[10] (online supplemental table 1).

Prevalence of suicidal behaviours
Suicidal ideations

A total of 423 (out of 1625) medical students had lifetime SI reported in five studies, and the pooled prevalence was 25% (95% CI: 14% - 37%, I^2=91%; p<0.01) (figure 3A). There was publication bias based on visual inspection of the funnel plot, and only three studies were within the funnel (online supplemental figure 1A). The estimated effect size when the SE approaches zero is 0.1858, with a CI of −0.1544 to 0.5260, further suggesting a lack of small-study effects and p=0.6477, indicating no substantial publication bias.

Suicidal plans

Five studies reported data on SPs among medical students in Bangladesh, and 124 (out of 1625) medical students had lifetime SPs. The pooled prevalence was 6% (95% CI: 2% - 12%, I^2=91%; p<0.01) (figure 3B). In the funnel plot, SE approaches zero, the effect size estimates 0.0055, with a CI of −0.0863 to 0.0973 and p=0.1968, indicating minimal publication bias, indicating no substantial small-study effects (online supplemental figure 1B).

Suicidal attempts

Five studies reported data on SPs among medical students in Bangladesh, and 134 (out of 1625) medical students had lifetime SPs. The pooled prevalence was 8% (95% CI: 1% - 17%, I^2=96%; p<0.01) (figure 3C). In the funnel plot, p=0.0751, indicating possible publication bias, and the effect size estimate when the SE approaches zero is −0.0125, with a CI of −0.0857 to 0.0606, suggesting potential small-study effects that may influence the results (online supplemental figure 1C).

Reasons for suicidal behaviours

Among the six studies, one study[23] documented the reason for suicidal behaviours among 13 medical students as follows: parental divorce (2 students), failing in the professional examination (2 students), depression due to mental disturbance or academic pressure (5 students), blackmailing (1 student), extra-marital issue (1 student) and not reported (2 students).

Methods used for suicidal attempts

The methods reported in one study[23] were hanging (n=12) and poisoning (n=1) for suicidal attempts among the medical students, where poisoning by suicide occurred by a male student, and the remaining method was used both for males and females.[23]

Factors associated with suicidal behaviours among medical students
Suicidal ideation

In half of the included studies, female students, depression, familial history of suicide including depression and drug addiction were associated with SI[7 22 25] (online supplemental table 2). However, one study reported that females were twice as likely to be susceptible to SI, and a family history of SA or death by suicide increased the odds by sixfold, while mental or psychological conditions increased the odds by over twofold for SI.[22] Interestingly, parents' high expectations[22] and failure to pass in any subject during the academic study period[7] were found to have no statistically significant association with SI, respectively (online supplemental table 2). The meta-analysis showed that female gender is associated with SIs among medical students in Bangladesh from the included two studies with the pooled OR=1.24 (95% CI: 0.42 - 3.71, I^2=48%; p>0.05) obtained from the random effects model[7 22] (online supplemental figure 2A).

Suicidal plan

Regarding SPs, one study reported that the level of depression, comorbidity, substance use, familial incidence of suicidal attempts or deaths, academic performance and female gender were associated with SP[22] (online supplemental table 2).

Suicidal attempt

Depression, excessive academic pressure, parental divorce, blackmailing, extramarital issues, substance use and failure in the professional examination were found to be related to suicidal attempts among medical students.[22 23] In addition, familial history of previous suicidal attempts was also a responsible factor for SA[22] (online supplemental table 2). The meta-analysis showed that drug addiction/substance use is associated with suicidal attempts among medical students in Bangladesh, from the included two studies with the pooled OR=0.52 (95% CI: 0.02 - 12.03, I^2=75%; p<0.05) obtained from the random effects model[7 22] (online supplemental figure 2B).

DISCUSSION

The current systematic review and meta-analysis identified a relatively small (n=6) yet empirically supported expanding corpus of research on suicidal behaviours among Bangladeshi medical students. However, personal and familial history of depression, inter-personal conflicts, prior suicidal behaviours and drug addiction were found to be strongly associated with the suicidal behaviours.[22 23 25] However, the exploration of factors associated with these behaviours remains under-researched, as only three-quarters of the studies investigated individual factors (ie, SI, SP, SA) related to suicidal behaviours among Bangladeshi medical students. In the present systematic review comprising 1625 medical students, the pooled prevalence of lifetime suicidal behaviours was found to be 25% for SI, 6% SP and 8% for SA.

The lifetime pooled prevalence of suicidal behaviours among Bangladeshi medical students is 25%, notably higher than the global prevalence of 17% among physicians worldwide.[28] This highlights a mental health trajectory where increased SI during medical education may contribute to the rising suicide rates among practising physicians.[29 30] Despite the influx of undergraduate students coming into the medical profession is an increasing pattern for Bangladesh, the doctor–patient ratio remains approximately 0.70 per 1000 individuals.[31] This underscores the vital role of medical students, not only for their personal well-being but also for the nation's healthcare system. Compared with university students globally, who report a lifetime suicide ideation with a prevalence of 27.1%, Bangladeshi medical students exhibit a slightly lower lifetime prevalence (ie, 25%).[32]

However, the pooled prevalence of suicidal behaviours was 17.4% among Southeast Asian students[33] and a 2%–12% range reported for PhD students, reported in a number of systematic reviews and meta-analyses.[34] The higher prevalence of suicidal behaviours in Bangladesh, compared with other South Asian countries, may be attributed to societal expectations, limited mental health resources and socioeconomic challenges.[10 16 23] Additional factors exacerbating the issue include the cultural stigma around seeking psychological support, emotional drive, economic barriers and lack of structured counselling support interventions, routine screening to detect any depressive symptoms and suicide prevention protocol in medical institutions.[7 10 22 23] These challenges, as highlighted in studies from Bangladesh, indicate that medical students face significant mental health stress compared with their peers in other disciplines.

These high prevalence rates demonstrate the alarming frequency and severity of suicide practices among university students. Among younger university students, there was a notable difference between the past-year SI rate of 14.5% and the lifetime frequency of 14.1%, though significant differences were observed compared with other student groups.[32] This review reveals Bangladeshi medical students had a higher lifetime prevalence of SAs at 8%, compared with the global estimate of 2.19%[6] for medical students and 3.1% for university students in general.[6 32] The loss of young, talented individuals not only devastates their families and peers but also represents an irreparable social and professional loss, cutting short the potential contributions of future healthcare providers.[35] Furthermore, this high burden of SA and SP often causes severe mental trauma and post-traumatic stress disorder among the medical students.[36] This distress, coupled with the lack of accessible counselling services, often leads to repeated attempts and, tragically, complete suicide eventually.[10 25]

The responsible factors related to SI were depression, female gender, drug addiction, blackmail, extramarital affairs and excessive academic pressure. However, depression is prevalent among medical students, with over one-quarter of them (ie, 24.7%–29.5%) suffering from any form of depression,[15 37] which is the only factor associated with SAs. The findings in the present study are consistent with other systematic reviews among medical students where mental health issues (depression, anxiety, stress, burnout, restlessness, agitation, sleep disorder, etc), substance use, female gender, smoking and first-year medical students were associated with suicidal behaviours.[38 39]

Suicidal thoughts and acts seem to be more common among women in the medical field, and this finding has been confirmed in various cohorts and populations[8 29] as reported in our review. However, since there are more female doctors and medical students than ever before,[40] this is especially concerning for the healthcare sector. The high burden of SI among Bangladeshi medical students compared with sub-Saharan Africa (18.7%),[1] Vietnam (8.5%), China (17.5%), Austria (11.6%), United Arab Emirates (7%), Sweden (13.1%)[41] represents a significant human cost that extends beyond its impact on healthcare services in these resource-constrained settings. If suicide rates rise further, health services will be negatively impacted, and the country will face dropouts in medical education, which is alarming.[42] Preventive measures are, therefore, required to target this population to improve Bangladesh's healthcare system and promise a better future for the country's burgeoning youth. Despite the prevalence of suicidal behaviour among medical students in Asia (0.858%), being lower than the USA (5.8%) and non-sub-Sahara African countries (0.8%), no statistical difference was found in sub-group analysis.[1 36 43] Fewer studies were conducted in Asian countries as well as LMICs compared with HICs. The disparity could be explained by the attitudes towards suicide behaviours that exist in these regions. Although suicidal behaviours are illegal in many countries, including Bangladesh,[44 45] greater suicide literacy can certainly reduce stigmatising attitudes.[46]

Limitations

Several limitations should be considered when interpreting these findings. First, all included studies relied on self-reported data, which is subject to biases related to recall. However, pertinent sensitivity analysis and an

examination of publication bias were conducted in this review. Second, the meta-analysis did not contain any prospective or cohort studies, meaning that the temporal relationship between the factors and suicidal behaviours could not be fully established. Future research on Bangladeshi medical students should consider prospective designs to better understand the causes of suicidal behaviours. Third, only a limited number of studies on suicidal behaviours were conducted before the COVID-19 pandemic, a time when a large number of young people increased their use of the internet for social media and online learning. This shift likely heightened exposure to stressful events and their consequences, including suicide.[1] Therefore, the review's findings may not fully represent the current burden of suicidal behaviours in Bangladesh. Last but not least, not all studies included in the review addressed the specific variables of interest (eg, SI, SP, SA) or the methods used for suicide. To ascertain the precise burden of suicide behaviours in the region, future research should include comprehensive studies that encompass all the relevant characteristics associated with suicide.

Future directions

Future research should employ qualitative methods to better understand the underlying causes of suicidal behaviours among medical students, given the potentially fatal nature of these behaviours. This approach will help to develop strategic preventative measures aiming at reducing the number of students and future doctors who die by suicide. With such a large population, national suicide databases and surveillance systems are essential. Decriminalising suicide through changes to the legal system should be a top priority, as many developed countries and neighbouring Asian nations have already established. This would support the identification and treatment of individuals exhibiting suicidal behaviours.[47] Moreover, universities and medical colleges in Bangladesh should implement routine screenings for suicidal behaviours, allowing vulnerable students to receive help before their symptoms worsen. Although academic curricula in medical colleges are highly stressful and students often experience burnout, alternative methods such as co-curricular activities, sports, meditation, yoga, and mindfulness should be integrated to reduce stress, as recommended by previous studies.[1 48] Furthermore, addressing Bangladesh's pressing suicide issue requires a collaborative approach across multiple sectors, including families, civil society, voluntary organisations, non-governmental organisations, government agencies, social scientists, researchers, funders, media professionals, social workers, physicians and other relevant organisations.

CONCLUSIONS

The meta-analysis findings from this systematic review indicate that, approximately one-fourth of Bangladeshi medical students have experienced lifetime SI, with about one in eight (8%) engaging in suicidal attempts. Additionally, factors like moderate to severe depression, a familial history of mental health issues, academic pressure and drug addiction were found to be significant contributors, with female medical students being the most vulnerable group for various suicidal behaviours. However, very few studies have been conducted in Bangladesh to quantify the burden and associated factors. Given the recent nature of research on suicidal behaviours in Bangladesh, and the under-reporting identified in this review, future large-scale studies in LMICs including Bangladesh are urgently warranted.

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