Childhood sexual abuse, internet addiction, problematic pornography use, and depression among medical students in Bangladesh

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Abstract

Background

Due to several factors (eg. sexual abuse, academic pressure), medical students go through significant mental health issues such as internet addiction (IA), problematic use of pornography (PPU), and depression. This study aimed to assess the prevalence of childhood sexual abuse (CSA) history, IA, PPU, and depression among medical students and associated factors. **Methodology**: Childhood sexual abuse history, Young's Internet Addiction Test (IAT-20), Brief Pornography Screener (BPS), Patient Health Questionnaire (PHQ-9), and other sociodemographic information were collected through an online Google form across Bangladesh in this cross-sectional study. Descriptive analysis, Pearson chi-square test, and ordinal logistic regression were employed to assess the prevalence, significant factors, and gender-based assessment. Later, to assess the correlation between the dependent variables, a bivariate co-relation matrix was employed.

Results

A total of 3264 students participated with a mean age of 21.5 years old. we found that 28.3% of students had a history of CSA, among them 7.35% were male, and 20.96% were female. 70.2% of students had PPU, 62.1% of them were addicted to the internet and 50.4% of them were depressed. Gender, medical college type, marital status, CSA, IA, and PPU had a significant effect on increasing depression among the participants and positively related with each other.

Conclusion

The study found many medical students with IA, PPU, and depression. Students must discuss their CSA-related experiences. To protect children from CSA, lawmakers should pass legislation. Eliminating IA and PPU requires psychological therapy for students. Marriage may reduce depression, encouraging stakeholders to explore its effects. Finally, public awareness is essential.

Introduction

The discussion on mental health has gained substantial importance in the context of students, especially medical students. The prolonged academic and professional pressures experienced by medical students have elevated their mental health as a critical concern [1, 2]. Rising statistics indicate an increasingly worrying picture of the overall situation of medical students' mental health. Studies from various countries reveal alarming rates of distress: 40.7% in Iran [3], 32.5% in Germany [4], 29.6% in Brazil [5], and a staggering 52% in France [6]. In South Asia, the prevalence of depressive syndromes is 26.4% [7], with 19% of medical students found to have depression and mental health issues [8].

In the broader realm of mental health concerns, current research explores diverse aspects like childhood sexual abuse (CSA), problematic pornography use (PPU), internet addiction (IA), and depression [9–11]. Childhood sexual abuse is a prevalent global issue, particularly in South Asia. Research in the region, especially in India, focusing on girls under 18, has reported CSA frequencies ranging from 4–41% [12]. The prevalence of CSA is escalating in Bangladesh day by day. A report by Ain o Salish Kendra (ASK) in Bangladesh during the COVID-19 pandemic found that at least 30% of children faced CSA and various forms of harassment, marking a 3.5-fold increase compared to the pre-pandemic period in Bangladesh [13]. Another study found that approximately 14.75 % of the maleparticipants disclosed their CSA experiences, and a significant 73.77 % faced repeaed abuse [14]. In the United States, a study on undergraduate students revealed a significant gender disparity in CSA, with a higher percentage of females (41.6%) disclosing a history compared to males (30.7%) [15]. Studies from Greece found that 18% of medical students faced CSA, and in China, the prevalence rates were 22.11% among females and 14.69% among males [16, 17].

Problematic pornography use (PPU) is also a growing concern among South Asian youth, with studies highlighting its associations with poor mental health outcomes [18, 19]. In Bangladesh, research revealed that 72% of individuals had consumed pornography at least once, with approximately half being occasional consumers [20]. Another study in Bangladesh found around 58.4% of undergraduate students were highly involved with PPU [21]. Studies in India suggest a concerning prevalence of PPU among medical students, with estimates ranging from 11% [22] to 12.5% [23]. PPU may contribute to depression in people who are addicted, can disrupt real-life relationships, leading to social isolation, and may contribute to mood disorders [24, 25].

Additionally, the interconnection between internet addiction and the mental health of medical students extends to heightened levels of depression, adversely affecting academic performance, and potentially contributing to suicide. A recent study involving Bangladeshi medical students revealed that 58% of internet users experienced moderate to severe depression [26]. Another study found that IA was noted in 29.4% of medical students in Bangladesh, among whom 63.7% reported mild to severe anxiety, 29.3% had moderate to severe depression, and 84.9% indicated moderate to high perceived stress levels [27]. In India, around 40% of medical students had IA, correlating with psychological distress, where 42.1% experienced depression, 42.4% anxiety, and 20.0% stress symptoms [28]. Research in Bangladesh also revealed high percentages (63%, 75%, and 60%, respectively) of internet addiction, depression, and anxiety among students, especially those using social media and lacking regular physical exercise [29, 30].

In the same way, CSA, PPU, and IA share linked connections, collectively shaping the psychological landscape of medical students. Those with a background in CSA might carry emotional distress into their academic and professional endeavors [31]. Excessive engagement in pornography [32] or internet activities may result in addiction, impacting focus and overall well-being [33]. Depression, whether influenced by these factors or existing as an independent issue, could contribute to burnout and impede the academic performance of medical students [34]. Acknowledging these interconnections is vital for

customizing effective mental health support systems to address the unique challenges confronted by individuals in medical education.

Despite considerable research on mental health and correlated factors among undergraduate students, high schools, and adolescents in Bangladesh, there is a notable gap in scholarship on the mental health of medical students, particularly regarding CSA, IA, and PPU and their interconnectedness with depression. Moreover, there is a lack of research on the mental health issues of male medical students who have experienced sexual abuse and how these factors interplay with depression. This research aimed to investigate the prevalence and impact of CSA, IA, and PPU and how they were interconnected with depression among medical students in Bangladesh, with a specific focus on gender influences. Understanding these dynamics is crucial for addressing the mental health challenges medical students face while navigating the demanding landscape of medical education.

Methodology

Study design, and data collection procedure

Data from 3264 students was gathered between September 2023 to January 2024 from public and private medical colleges spread across Bangladesh. The research participants included 21.5 years of age on average, with 53.7% of the respondents being male. A simple random sampling method was used to collect the sample. In the initial phase, a pilot study was made up of 57 students who responded to a self-report questionnaire. After analyzing the pilot study, which was undertaken to determine the viability and effectiveness of the research, a comprehensive survey was carried out. Google Forms, an online survey application, was used to collect the data. The questionnaire included sections on Childhood sexual abuse questionnaire (CASQ) Young's Internet Addiction Test (IAT-20), Brief Pornography Screener (BPS), Patient Health Questionnaire (PHQ-9), and other sociodemographic information.

Criteria for selection

The study's inclusion and exclusion criteria were as follows: i) enrollment of students who were affiliated with a medical college in Bangladesh; ii) who were Bangladeshi by birth; and iii) who provided consent to participate in the study. The exclusion criteria for this research were as follows: i) foreign medical students who were studying in the medical colleges in Bangladesh; and ii) respondents who did not provide their permission.

Measures

Sociodemographic measures

Many sociodemographic inquiries were made, including those about age, gender (Male, Female), division (Barishal, Chittagong, Dhaka, Khulna, Mymensingh, Rajshahi, Rangpur, Sylhet), living area (City, Town, Village), current residence (In mess with friends, Medical Hostel, Rented house, With family, Private),

medical college type (Private, Public), studying prof (1st, 2nd, 3rd, 4th, Internship), marital status (Married, Unmarried), religion (Islam, Hinduism, Others).

Childhood sexual abuse

This study used the Child Sexual Abuse Questionnaire (CSAQ) that was developed and validated by Meichun et al. 2014 to determine whether the participants had experienced any sort of sexual abuse while they were children [35]. There are 15 questions in the CSAQ, which are used to assess different forms of CSA, with two answers yes or no. The respondent would be categorized as having a CSA history if he or she answered "yes" to any of the 15 questions posed.

Internet addiction test (IAT) scale

K. Young developed the Young's Internet Addiction Test Scale (IAT), a standardized psychometric measure that evaluates internet addiction [36]. This validated scale was used to evaluate the severity of internet addiction driven by individuals' online recreational pursuits on any internet-connected device. The IAT consists of 20 questions and each response must be provided on a five-point Likert scale 0 = Not Applicable 1 = Rarely 2 = Occasionally 3 = Frequently 4 = Often 5 = Always. The examinee's scores for each of the 20 possible answers are added collectively to get the final IAT score. One hundred is the maximum number of points that can be earned. The scores above 50 indicate internet addiction, while those below 50 indicate no addiction [37].

Patient depression questionnaire (PHQ-9)

To identify patients who had depressive disorders, the Patient Health Questionnaire (PHQ-9) was implemented [38]. The measure has nine items, and each item is graded on a Likert scale from 0 (Not at all) to 3 (Almost every day). Considering the final scores from 0 to 4, 5 to 9, 10 to 14, 15 to 19, and 20 to 27, depression intensity was divided into four groups: none to a minimum, mild, moderate, moderately severe, and severe. Participants who received a score of moderate to severe (above 10) in the current study were identified as having depressive symptoms [39].

Problematic pornography use

The consumption of pornography was assessed over the previous half-year period by utilizing the Brief Pornography Screener (BPS), developed by Kraus [40]. The assessment comprises five items and uses a three-point rating scale, where 0 represents ‘never’, 1 represents ‘occasionally’, and 2 represents ‘always’. As an example, one query says, ‘You experience difficulty in resisting strong urges to engage with sexually explicit material’. The total score ranged from 0 to 10. A cutoff score of 4 was used to identify participants with problematic pornography usage. A greater level of problematic pornography consumption is demonstrated by higher scores [41]. The Cronbach's alpha coefficient for the BPS was 0.84.

Statistical analysis

Socio-demographic characteristics, CASQ, IAT-20, BPS, and PHQ-9 were all included in the descriptive analysis. Score bands on the IAT-20, PHQ-9, BPS, and CASQ Likert scale classified respondents as having childhood sexual abuse history, IA, and problematic pornography use. We investigated the relationships among our parameters and childhood sexual abuse history, IA, and problematic pornography use by using the Pearson Chi-square test. Depression was the dependent variable, and all other factors were the independent variables in the model of ordinal logistic regression. Before conducting chi-square and logistic regression analyses, multivariate normality was confirmed by a Shapiro-Wilk test. A correlation matrix was utilized to analyze the multicollinearity of the dataset. The Kolmogorov-Smirnov test evaluated data dependence and verified multivariate normality, independence, and absence of multicollinearity. 95% confidence intervals and odds ratios (OR) have been calculated for all categorical variables. For a gender-based assessment, a Proportional Odds Model of the ordinal logistic regression model was fitted. SPSS 26.0 was used for all analyses.

Results

Socio-demographic description

Table 1 shows the Socio-demographic descriptive analysis of the study. In total, 3264 students filled out the survey. The sample consisted of 46.3% (1512) female students and 53.7% (1752) male students. The mean age of the respondents was approximately 21.5 years old. Participants' religious affiliations include 45.20% of Muslims, 4.80% believed in Hinduism, and 0.40% followed other religions. The participants were categorized by their living area, which included 15.80% living in the city, 17.60% living in town, and 16.90% living in the village. The study also investigated marital status, where 91.80% of participants were unmarried, and 8.40% were married. **Fig 1** demonstrates the divisional distribution of the respondents.

Prevalence of childhood sexual abuse, pornography addiction, internet addiction, and depression

Fig 2 shows the prevalence of depression, CSA, IA, and PPU among the participants. This study found that 50.4% of them were depressed, and the rest were not. 28.3% of students had a history of childhood sexual abuse and the rest 71.7% did not. The majority, 70.2% of students, were addicted to pornography while the rest 29.8% were not. Again, the majority 62.1% of students were internet addicted while the rest 37.9% of students were not internet addicted. Elsewhere, only 3.7% of students were severely drug addicted while the maximum 96.3% of students were not drug addicted. **Fig 3** pointed out the gender-based CSA history. 7.35% of male and 20.96% of female students were having CSA history.

Significant factors associated with depression among the participants

Table 1 shows the significant factors associated with depression among the medical students of Bangladesh. Gender ($p<0.05$), medical college type ($p<0.05$), marital status ($p<0.05$), childhood sexual abuse ($p<0.001$), internet addiction ($p<0.05$), and problematic pornography use ($p<0.001$) had a

significant effect on increasing depression among the public and private medical college students of Bangladesh.

Table 2 represents the proportional odds ratios of the OLRM. The investigation found that female respondents were 1.79 times (OR=1.79, 95% CI=1.56 – 2.98) more likely to have a high level of depression compared to male respondents. Students who had lived in the city were 1.21 times (OR=1.21, 95% CL=0.80-1.82), and those in town were 1.45 times (OR=1.45, 95% CL=0.97-2.15) more depressed compared to those who had lived at the village.

Additionally, students who had lived with friends were 1.13 times (OR=1.13, 95% CL=0.75-1.68); in the medical hostel were 1.85 times (OR=1.85, 95% CL=0.74-1.77); in the rented house were 1.46 times (OR=1.46, 95% CL=0.98-2.15) more likely depressed compared to those who had lived with the family. The respondents who had studied public medical colleges were 2.35 times (OR=2.35, 95% CI=1.93 – 2.60) more depressed compared to others who studied at private medical colleges.

Unmarried students experienced 2.1 times (OR=2.1, 95% CL=1.65-3.86) more depression compared to married individuals. Students who had experienced childhood sexual abuse were 3.1 times more depressed compared to others who had not had any experience of childhood sexual abuse. Students who had IA were 3.6 times (OR= 3.6, 95% CL=3.01–3.83) more depressed compared to others who did not have IA. Respondents with problematic pornography use were 2.5 times (OR=2.5, 95% CL=2.13–2.86) more likely to experience depression compared to others without.

Correlation between childhood sexual abuse, pornography addiction, internet addiction, and depression

Using a bivariate correlation analysis, we examined the correlations between IA, CSA, PPU, and depression (**Table 3**). The psychological components, however, showed strong positive connections. PPU was strongly correlated with IA ($r = 0.643$, $p < 0.01$). Additionally, there were substantial positive associations between IA ($r = 0.847$, $p < 0.01$) and PPU Use ($r = 0.775$, $p < 0.01$) as well as CSA. Remarkably, all other factors, IA ($r = 0.821$, $p < 0.01$), CSA ($r = 0.919$, $p < 0.01$), and PPU ($r = 0.762$, $p < 0.01$), exhibit extremely significant positive relationships with depression.

Gender-based stratified analysis

The dataset was divided into two segments according to the gender of the participants, and an ordinal logistic regression model was used (**Table 4**). The male respondents' model met the assumption in a test of parallel lines at a significance level of 5% (Male, Chi-square 41.194, P-value 0.001), as did the female respondents' model (Female, Chi-square 42.012, p-value 0.001). Significant factors across both genders had a similar tendency of depression, as shown by the odds ratios in Table 3. In the female model, the variables "Medical college type" and "internet addiction" were shown to be not statistically significant.

Discussion

The current study was a multi-institutional descriptive cross-sectional study conducted across different medical colleges in Bangladesh. The study aimed to determine the prevalence of CSA history, IA, PPU, and depression, with the importance of illuminating the complex interplay of depression associated with these socio-demographic factors among the students at medical colleges in Bangladesh. The study's focus on these aspects is crucial, as the studied factors can have long-lasting effects on mental health, academic performance, and overall well-being.

The study conducted on 3264 Bangladeshi medical college students revealed that nearly a third of the participants (28.3%) reported a history of CSA. This result aligns with a previous Indian study among medical college students, which reported 32.7% experienced CSA, and a Chinese study among non-medical college students reported 27.2% experienced CSA [42]. However, in the socio-cultural context of Bangladesh, the reported prevalence of CSA history in this study can be described as notably high. Meanwhile, we examined gender-based CSA history which is the noteworthy finding of our study. Of the reported 28.3% of CSA history, 7.35% were males and 20.96% were females, raising significant concerns. Compared to the previous study, a similar prevalence was found in a meta-analysis of more than 60 studies across 22 countries, whereas 7.9% of males and 19.7% reported as victims of CSA [43]. Another study among Indian college students found that CSA is significantly more common among males, with a prevalence of 18.4%, compared to females, where the prevalence is 10.4% [44]. Multiple factors may contribute to individuals engaging in CSA, including the presence of inadequate reporting mechanisms, a culture of shame, and social stigma that may hinder victims or their families from reporting cases of child sexual abuse [45]. Several studies have found that CSA history can lead to the enduring impact of early traumatic experiences [44, 46]. The current study also found a significant correlation between childhood sexual abuse (CSA) and the onset of depression in adulthood.

Studies from all over Bangladesh have shown a varied range in the prevalence of IA among students. A study from Dhaka among medical college students reported a relatively high prevalence of IA (68.4%) [47], whereas the present study revealed that 62.1% of the participants suffered from IA. A similar finding has been seen in a study from Chittagong where 63.39% of medical college students had reported themselves as internet addicted [48]. Another study from Barishal showed a comparatively lower prevalence of IA among students, decreasing by 43.8% [49]. The notable percentage in the present study indicates a significant prevalence of IA among medical college students, which is a cause of concern. Research has found that depression can be a contributing factor to IA [50]. Our findings also indicated that those with IA were more likely to be depressed than those without.

The findings revealed that nearly a third of the participants (29.8%) engage in PPU, which is a cause for concern. In a prior cross-sectional study conducted among Bangladeshi students akin to the current study, the findings revealed that 32.6% exhibited PPU, a trend consistent with the present study [51]. In a separate study involving Taiwanese students, a more pronounced prevalence of PPU was identified, reaching 71% [52]. The variations in results can be attributed to differences in geography, criteria, and the studied samples. There can be several reasons why medical students have PPU such as being part of the medical field, students' exposure to explicit medical content may have risen, thereby desensitizing

them, and affecting their behavioral patterns. Additionally, the hard demands of medical studies may prompt certain students to resort to pornography as a way of alleviating stress and depression [53]. This study also found students with PPU were more likely to experience depression than those without.

A growing body of research suggests a rising prevalence of mental health disorders among students, especially those enrolled in medical colleges [54]. Hence, the present study assessed depression among medical college students, revealing a prevalent rate of 49.6% reported depressive symptoms, consistent with a previous Bangladeshi study among medical college students [55]. Several studies suggested that female students are more likely to experience depression than male students and unmarried students have higher odds of experiencing depression compared to married students [56], which is consistent with the current study. Existing literature suggests that marriage can act as a buffer to depression [57], while gender differences, especially endocrine differences, greater issues with body image among females, and factors associated with gender roles, may contribute to the development of depression in females [58]. Additionally, a study from Bangladesh found that students from private medical colleges were more depressed compared to those in public medical colleges [59], which contrasts with the present study.

Strength and Limitations

To the best of our knowledge, this is the first study of its sort looking at the prevalence of CSA history, IA, PPU, and their association with depression altogether, and especially examining gender-based CSA history among medical college students in Bangladesh. There are no other studies in Bangladesh that specifically examined male students as victims of CSA. We selected medical college students for our study because they were more willing to discuss such concerns and had better recollections of previous incidents. Others may not understand the various facets of CSA, IA, PPU, and drug addiction. This aspect inspired us to obtain the necessary information from a sample of medical college students, thereby strengthening the study. Regarding limitations, our research is cross-sectional and uses a self-reported online form for respondents to complete.

Conclusion

The primary aim of the research was to evaluate the prevalence of CSA, IA, PPU, and depression among medical students in Bangladesh. The research showed that a considerable number of medical students were experiencing IA, PPU, and depression. A significant number had a history of CSA, and a notable proportion were male students. Students must openly acknowledge and address the feelings of helplessness associated with CSA. Policymakers should enact legislation to protect children from the history of CSA. Students should seek psychological treatment to eliminate IA and PPU. Marriage may be seen as a factor that decreases depression, prompting stakeholders to consider its implications. Finally, it is vital to raise awareness in society.

Declarations

Ethical approval

This study was conducted following the Helsinki declarance 2000. Noakhali Science and Technology University's Institutional Review Board (IRB) approved the research and provided logistical assistance. **NSTU/SCI/EC/2023/170** is the reference number. Only those who agreed to participate in the research by signing a permission form were included in the analysis.

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No

Conflict of interest

The authors have no conflict of interest to declare.

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Data availability

Due to the restriction set by the ethical committee, as this article is a combined project, data will be available upon reasonable request to the corresponding author.

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Figures

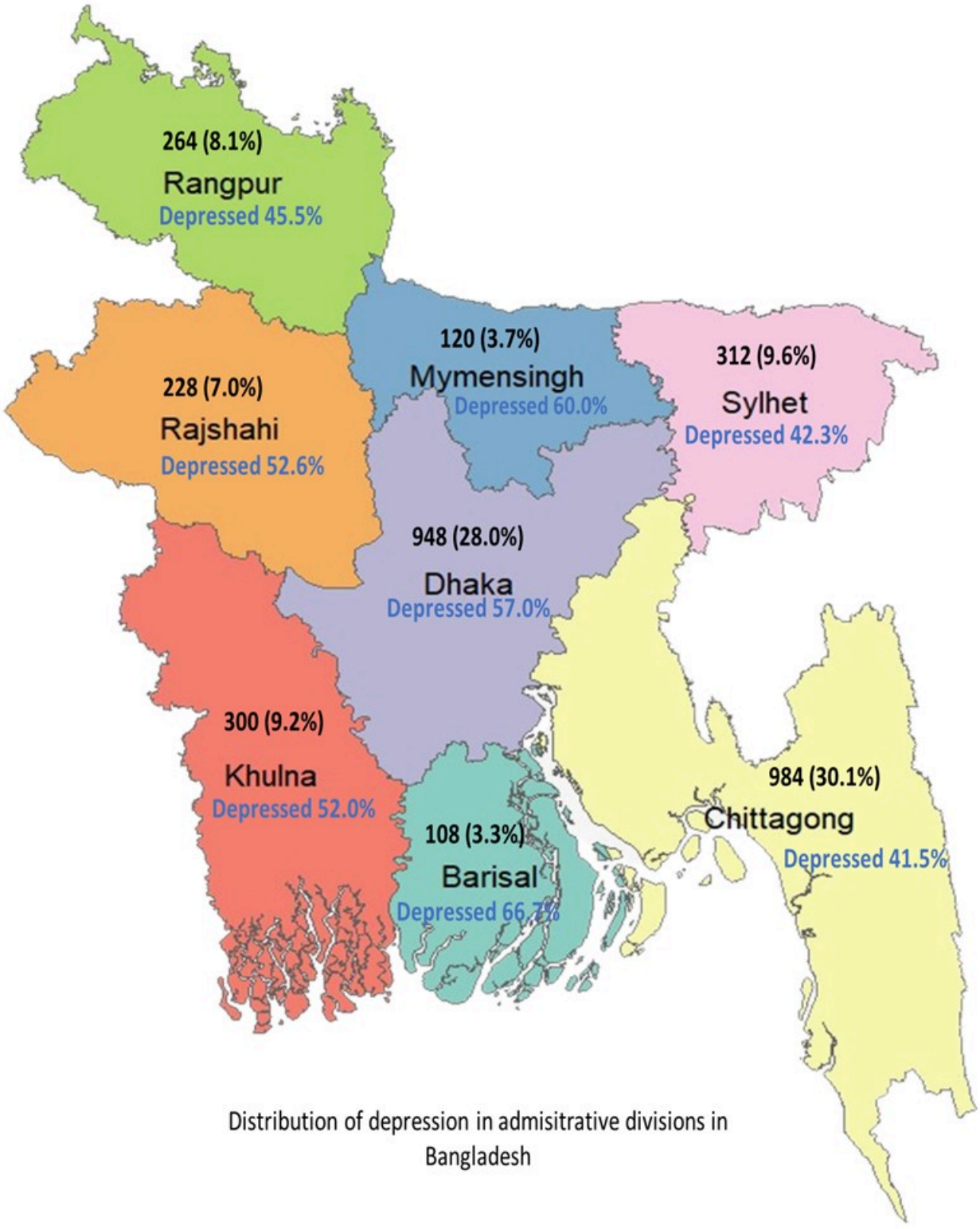

Figure 1

Divisional Distribution of the respondents and prevalence of depression based on divisions

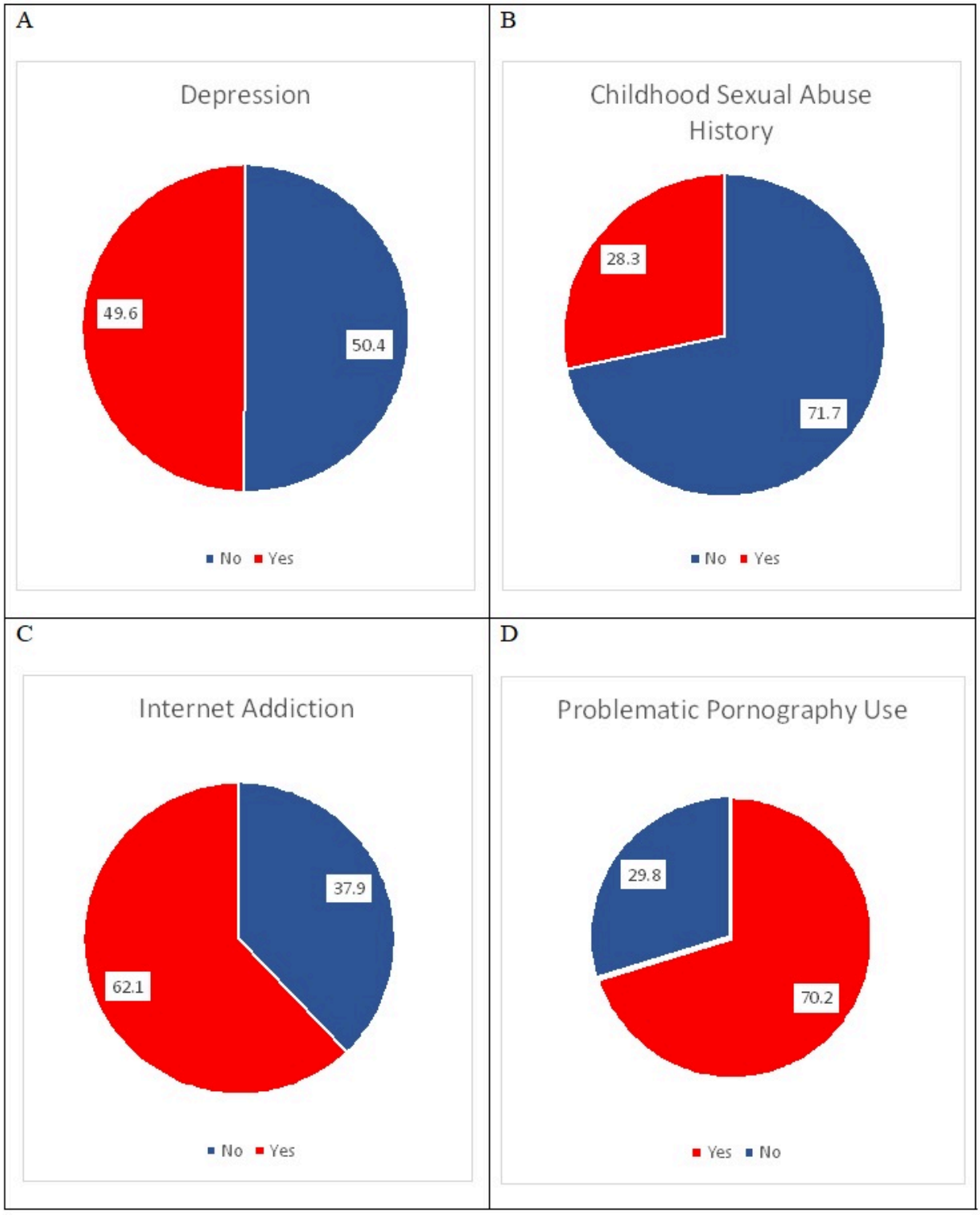

Figure 2

Prevalence of depression, childhood sexual abuse history, internet addiction, and problematic pornography use among the respondents. A: Prevalence of depression; B: Prevalence of Childhood sexual abuse history; C: Prevalence of internet addiction; D: Prevalence of problematic pornography use

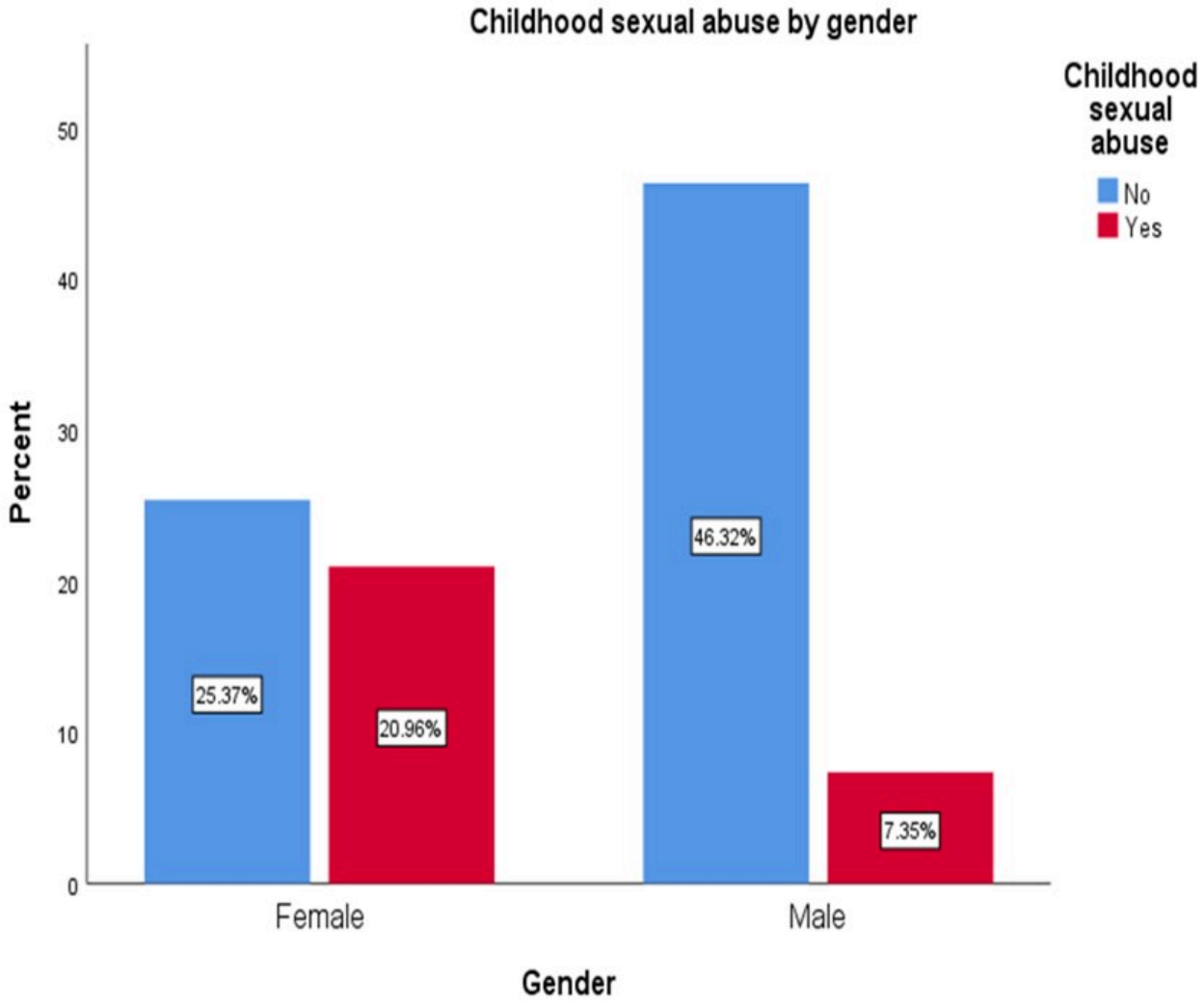

Figure 3

Childhood sexual abuse history among male and female participants