



Exploring media consumption and mental health among young adults during the second wave of COVID-19 in Bangladesh

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ARTICLE INFO

Keywords:

Media exposure
Social media
COVID-19
Mental health
GAD-7
Lockdown
Bangladesh

ABSTRACT

Background: This study examined the association between media exposure and mental health during the second wave of lockdown among the general population of Bangladesh.

Methods: A total of 449 adult participants were enrolled in the study to evaluate their levels of exposure to total media, electronic media, and social media. Mental health was assessed using a 7-item generalized anxiety disorder (GAD-7) scale. A multivariate logistic regression model was constructed to explore the relationships between media exposure levels and anxiety. The models included covariates such as sex, daily working hours, health problems, media distraction, and income from social media.

Results: The results showed that 44.5%, 39.2%, and 16.3% of participants reported low, medium, and high levels of exposure to different media during the COVID-19 period, respectively. Additionally, 96.4%, 2.7%, and 0.9% of participants had low, medium, and high levels of exposure to electronic media, respectively, and 89.1%, 10.5%, and 0.4% of participants had low, medium, and high levels of exposure to social media, respectively. The overall prevalence of anxiety was 25.38% among the respondents. Participants with high levels of total media exposure were significantly more likely to experience anxiety, with an odds ratio of 2.75 (95% CI = 1.40–5.14, $p < 0.01$). Females were 2.26 times more likely to experience anxiety than males (95% CI = 1.37–3.74, $p < 0.01$), and participants with health problems were also more likely to develop anxiety compared to those who did not.

Conclusion: Our results show a positive relationship between increased media exposure and anxiety levels, providing useful insights for both academics and public health practitioners.

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<https://doi.org/10.1016/j.heliyon.2023.e20371>

Received 10 April 2023; Received in revised form 14 September 2023; Accepted 20 September 2023

Available online 21 September 2023

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1. Introduction

The COVID-19 pandemic, which originated in Wuhan, China in late 2019, has rapidly spread across the globe, affecting over 200 countries and territories. As of March 15, 2023, the virus had infected more than 681 million people worldwide and caused over 6.8 million deaths [1]. The severity of the pandemic has necessitated the implementation of psychological crisis interventions, alongside other social safety measures, by governments and healthcare professionals worldwide to protect the mental health of citizens and healthcare workers [2,3]. These interventions aim to mitigate the potential negative impact of the pandemic on mental health, as well as to support the well-being of healthcare workers who are at the forefront of treating COVID-19 patients.

Social media has revolutionized human interaction by allowing individuals to interact and share information, opinions, and knowledge online [4]. As of 2020, the number of social media users globally has reached 3.96 billion, which is equivalent to 51% of the world's population. On average, people spend about 144 min on social media platforms per day [5]. Even in Bangladesh, individuals spend approximately 3 h on social media daily and depend on online sources like Facebook, Instagram, Twitter, LinkedIn, and other websites for information related to the COVID-19 pandemic [6]. Young people, particularly college students, are the most active users of social media [7]. Through social media, internet users can create, share, and exchange information virtually and network with other members who share similar interests, dreams, and goals [8]. However, the excessive use of social media has also been associated with negative consequences such as social isolation, cyberbullying, and addiction [9]. As social media continues to evolve, it is crucial to understand the impact it has on our society and work towards maximizing its benefits while minimizing its negative effects. While some studies have shown that social media use can lead to improved social skills, others have found it can be detrimental to language skills and distract studies and daily activities. Social media also poses challenges beyond academics, such as pressure to respond to messages immediately, addictive behavior, and difficulty disconnecting. Individuals must balance their social media use to avoid negative impacts on their personal and academic lives.

Earlier studies were evident that intense social media use (SMU) negatively affects the mental health of young and adolescents [10, 11]. Such associations can be explained through various mechanisms. One such mechanism is excessive exposure to unrealistic portrayals of others on social media. People often present curated and idealized versions of their lives, which can lead to upward social comparisons. When individuals compare themselves unfavorably to these idealized images, it can result in decreased mental well-being [12,13]. Another mechanism is the potential impact on school well-being. Intense SMU can lead to falling behind on schoolwork as individuals spend excessive time on social media platforms. This can negatively affect their academic performance and overall school well-being [12]. Furthermore, spending excessive time on social media may lead to reduced offline interactions with friends and family. This decreased face-to-face socialization can harm social well-being, as personal connections and social support are vital for overall psychological health [14]. Furthermore, this association can be explained using normalization theory in the national context. According to normalization theory, once certain risk behaviors are widely accepted and have become a normal part of everyday life, they may lose their association with problematic profiles and represent mainstream behavior instead [15,16]. In a similar vein, when intense and problematic social media use (SMU) is widespread and socially accepted, these behaviors may become normalized. In countries where there is a high prevalence of intense or problematic SMU, the negative associations with well-being that have been suggested might be less pronounced or even non-existent [17]. This indicates that the impact of intense SMU on well-being can be influenced by the prevailing social norms and cultural acceptance of such behaviors within a specific national context.

Reliable information dissemination is crucial during a health crisis to mitigate its impact [18]. Unfortunately, the COVID-19 pandemic has been plagued by an 'infodemic' due to the abundance of inaccurate information available on social media, online news portals, and television [6,19,20]. Exaggerated news and misinformation on COVID-19 disseminated through social media, online news portals, and television have caused fear, depression, and anxiety among the population, despite international efforts to prevent its spread [21–23]. Overexposure to media misinformation has resulted in social prejudice and stigma, leading to severe mental health burdens on infected patients and healthcare professionals, even resulting in suicides [24]. Several studies have already been conducted during the pandemic, reporting a positive association between high exposure to media and higher mental disorders [19,23,25,26]. Some studies suggest that media exposure leads to severe mental health outcomes, including suicidal behavior [27,28]. In Hong Kong, a study showed that older individuals who were more exposed to the media had higher levels of COVID-19-related anxiety [29]. Similarly, another study found that those exposed to various informational media for more than 3 h during the pandemic were at higher risk for mental health problems [30]. In Bangladesh, a study revealed that trust in social and traditional media was associated with increased anxiety and perceived stress during the pandemic [31].

Since the first confirmed case on March 8, 2020, followed by the first death on March 18, Bangladesh has been significantly affected by the COVID-19 pandemic [32]. The country experienced a devastating second wave of COVID-19 since March 2021, largely due to the intrusion of the delta variant of the virus. On April 14, 2021, the government of Bangladesh enforced a second nationwide lockdown to control the spread of the virus, which lasted until May 21, 2021. The lockdown involved stringent measures, such as the suspension of all non-essential services, a ban on inter-district travel, and the prohibition of all social gatherings to prevent the transmission of the virus [33]. Despite efforts to control the spread of COVID-19, Bangladesh has recorded over 2 million cases and 29, 445 deaths [34]. The pandemic has brought about significant changes to the lives of people in the country, with a surge in daily cases resulting in a shortage of medical equipment and an overwhelming sense of uncertainty. False information in the media has contributed to widespread fear and anxiety among the general public, exacerbating the impact of the pandemic on mental health. This impact has been particularly severe among young people, with many experiencing mental disorders and even suicidal thoughts [21,35, 36].

Several earlier studies have already documented the impact of COVID-19 on mental health in Bangladesh, but the association between media exposure and mental health has not been extensively investigated. Previous studies have mostly focused on other

aspects of media use during the pandemic, such as prevalence and determinants of media use [37–39], problematic internet use [40], internet use behavior and psychological health [41], trust on media and mental health [31], social media exposure and anxiety [42] and problematic internet use and depressive symptoms among 10–16 years adolescents [43]. Additionally, most of these studies were conducted during the early phase of the pandemic when people were still adjusting to the situation and coping with fear and uncertainty. The emergence of the Delta variant during the second wave of the COVID-19 pandemic in Bangladesh has caused significant devastation. However, the government had more time to prepare and put measures in place to control the spread of the disease, and people were generally more aware of the risks and how to protect themselves [33]. As a result, media exposure and its impact on mental health during the second wave differs from the first wave. For example, people may have become more desensitized to the constant media coverage of the pandemic and its impact, or the government's communication strategies may have improved, leading to a different level of trust in the information disseminated by the media. Additionally, the second wave affected people differently, with some experiencing more severe mental health issues due to the prolonged nature of the pandemic and the continued uncertainty. Therefore, the study aimed to explore the relationship between media exposure and mental health outcomes in Bangladesh during the second wave of the pandemic. By focusing on media exposure time, we hope to gain a deeper understanding of how various media channels impact mental health in adults in Bangladesh during public health crisis periods.

2. Methods

2.1. Study design and participants

Our study aimed to investigate the impact of media consumption levels on the mental health of young adults during the second wave of the COVID-19 lockdown in Bangladesh. We conducted a cross-sectional survey among young adults aged 18 or over who were residing in Bangladesh during the study period. To ensure the validity and reliability of the survey, we first developed a draft questionnaire and conducted a pilot survey. Once the final questionnaire was prepared, we disseminated it through various accessible social media platforms, such as Facebook, WhatsApp, and Instagram. We also requested our social network communities to participate in the survey and share it with their networks. The survey was conducted after lifting the second wave of lockdown during July 2022.

Given the absence of prior research utilizing our chosen measures, we resorted to an internet-based sample size calculator to ascertain the necessary sample size [44]. Adhering to the recommended 50% level of caution for our variable of interest, we arrived at a minimum sample size of 385 respondents, taking into account a 10% non-response rate, 5% precision, and a 95% confidence interval (accessed via <https://statulator.com/> on July 1, 2021). Our sample was derived from the general population of Bangladesh, which is estimated to be around 167 million [45].

A total of 449 respondents participated in the study. It had three sections including demography, how much time was spent on which communication media, and interrogations associated with the mental health status of the participants.

2.2. Measures

2.2.1. Sociodemographic features

The study included several sociodemographic variables, namely sex, age, education, family size, residence, occupation, and monthly family income. Sex was determined by asking participants if they identified as male or female. Age was divided into two categories: under 30 years old, and 30 years old or above. Education level was categorized as college or below, and above college degree. Family size was classified as 1–3 persons, 4–5 persons, and 6 persons or more. The residence was categorized as either urban or rural. Participants were asked to specify their current occupation as unemployed, student, or employed. Monthly family income was classified into three categories: below 10000 BDT, 10001–20000 BDT, and over 20000 BDT.

In addition to sociodemographic variables, participants' daily working hours were categorized as full-time (8 h), part-time (4 h), or casual hours. The frequency of participants' health problems due to excessive screen time during the COVID-19 lockdown was assessed using four response options: not at all, a little, sometimes, and often. Respondents were asked how frequently they were distracted by media use during the lockdown period and responses were recorded as not at all, a little, sometimes, and often. Participants were also asked if they had any income from social media.

2.2.2. Media exposure

This study investigated three forms of media exposure: total media exposure (TME), social media exposure (SME), and electronic media exposure (EME). The total media exposure (TME) was determined by asking participants about their total daily different media consumption. The responses were recorded as less than 2 h, 2–4 h, and more than 4 h. Further, participants were asked to report the amount of time they spent daily using prominent social media platforms such as Facebook, YouTube, WhatsApp, IMO, and LinkedIn, as well as electronic media sources such as television and the internet during the COVID-19 lockdown period. To identify media exposure levels, participants were asked to indicate the amount of time they spent consuming news and information and categorized them into the following three levels: less than 2 h, 2–4 h, and more than 4 h. These categories were then condensed into groups with low, moderate, and high exposure.

2.2.3. Mental health outcome

The mental health of participants was evaluated using the Generalized Anxiety Disorder (GAD-7) screening tool, which is a reliable and valid measure for assessing anxiety [46]. The GAD-7 scale is composed of seven items that ask about symptoms experienced within

the past two weeks, and each item is rated on a 4-point Likert scale ranging from 0 (not at all) to 3 (almost every day) to determine the severity of symptoms. The scale has been used in various studies [47,48] and has a high level of internal consistency (Cronbach's alpha of 0.911). The total score ranges from 0 to 21, and participants were grouped into four categories based on their scores: non-severe, mild, moderate, and severe anxiety (Spitzer et al., 2006). Scores of 0–4, 5–9, 10–14, and 15–21 were considered as non-severe, mild, moderate, and severe anxiety, respectively. A score of 10 or above is a reliable threshold for identifying individuals who may be experiencing symptoms of anxiety [46].

2.3. Data analysis

Descriptive statistics were utilized to examine the study participants' characteristics. Categorical variables were presented as percentages and frequencies, while continuous variables were presented as means and standard deviations. Pearson chi-square tests and Student's t-tests were employed in bivariate analyses to explore the relationships between TME, SME, EME, and anxiety. Multivariable logistic regression models were then constructed to account for potential confounding factors such as sex, daily working hours, health problems, media distraction, and income from social media. Odds ratios (OR) and 95% confidence intervals (CI) were used to evaluate the significance of the associations. A significance level of $p < 0.05$ was used to determine statistical significance. The data were analyzed using R statistical software package (version 4.0.0) and SPSS statistical software (version 26).

Table 1
Descriptive statistics of the respondents and total media exposure (TME) (n = 449).

Variables	TME, n (%)			p-value	
	Total (%)	Low (<2h)	Medium (2–4h)		High (>4h)
Overall	449 (100)	200 (44.5)	176 (39.2)	73 (16.3)	
Sex					0.002**
Male	318 (70.8)	157 (49.4)	119 (37.4)	42 (13.2)	
Female	131 (29.2)	43 (32.8)	57 (43.5)	31 (23.7)	
Age					0.124
Below 30	409 (91.1)	179 (43.8)	159 (38.9)	71 (17.4)	
Above 30	40 (8.9)	21 (52.5)	17 (42.5)	2 (5.0)	
Education					0.139
College or below	56 (12.5)	27 (48.2)	16 (28.6)	13 (23.2)	
Above college	393 (87.5)	173 (44.0)	160 (40.7)	60 (15.3)	
Family members					0.409
1-3 person	58 (12.9)	27 (46.6)	22 (37.9)	9 (15.5)	
4-5 person	306 (68.2)	132 (43.1)	118 (38.6)	56 (18.3)	
Above 6 person	85 (18.9)	41 (48.2)	36 (42.4)	8 (9.4)	
Residence					0.811
Rural	118 (26.3)	50 (42.4)	47 (39.8)	21 (17.8)	
Urban	331 (73.7)	150 (45.3)	129 (39.0)	52 (15.7)	
Occupation					0.098
Unemployed	20 (4.5)	8 (40.0)	11 (55.0)	1 (5.0)	
Student	360 (80.2)	155 (43.1)	139 (38.6)	66 (18.3)	
Employed	69 (15.4)	37 (53.6)	26 (37.7)	6 (8.7)	
Monthly income (BDT)					0.064
0–10000	370 (82.4)	157 (42.4)	145 (39.2)	68 (18.4)	
10001–20000	27 (6.0)	13 (48.1)	11 (40.7)	3 (11.1)	
Above 20000	52 (11.6)	30 (57.7)	20 (38.5)	2 (3.8)	
Daily working hours					0.000***
Full-time	110 (24.5)	67 (60.9)	37 (33.6)	6 (5.5)	
Part-time	128 (28.5)	36 (28.1)	65 (50.8)	27 (21.1)	
Casual	211 (47.0)	97 (46.0)	74 (35.1)	40 (19.0)	
Health problem					0.001**
Not at all	253 (56.3)	126 (49.8)	99 (39.1)	28 (11.1)	
A little	130 (29.0)	46 (35.4)	55 (42.3)	29 (22.3)	
Sometimes	32 (7.1)	17 (53.1)	11 (34.4)	4 (12.5)	
Often	34 (7.6)	11 (32.4)	11 (32.4)	12 (35.3)	
Media distraction					0.000***
Not at all	45 (10.0)	30 (66.7)	10 (22.2)	5 (11.1)	
A little	169 (37.6)	105 (62.1)	52 (30.8)	12 (7.1)	
Sometimes	152 (33.9)	50 (32.9)	77 (50.7)	25 (16.4)	
Always	83 (18.5)	15 (18.1)	37 (44.6)	31 (33.9)	
Income from social media					0.619
No	427 (95.1)	192 (45.0)	167 (39.1)	68 (15.9)	
Yes	22 (4.9)	8 (36.4)	9 (40.9)	5 (22.7)	

*significant at 0.05 level; ** significant at 0.01 level; ***significant at 0.001 level.

2.4. Ethical considerations

Prior to completing the online survey, all participants provided their electronic consent. Participants could opt out of the survey at any time without any consent. In addition, this survey did not request any personal information from respondents, ensuring they could not be identified. The study was approved (KUECC-2022/07/18) by the ethical review committee of the Khulna University Research Cell, Khulna 9208, Bangladesh.

3. Results

3.1. Demographic characteristics

Table 1 represents the demographic information of all 449 respondents. The majority of respondents were male (70.8%) and under 30 years old (91.1%). Most (87.5%) held degrees higher than a college education. The majority of households (68.2%) had a family size of 4–5 people and lived (73.7%) in urban areas. The largest group was students (80.2%), followed by employed (15.4%) and unemployed individuals (4.5%). The majority (82.4%) were low-income families with a monthly income of less than 10,000 BDT. In regards to daily working hours, the majority (47%) reported working casual hours, with 24.5% working part-time (4 h per day) or full-time (8 h per day). Over half of the respondents reported not experiencing health problems, such as eyesight or headaches while using media. Over half also reported being distracted by media use sometimes to always. About 95% reported not having an income from social media usage.

Table 2
Descriptive statistics of the respondents and social media exposure (SME) (n = 449).

Variables	SME, n (%)			p-value	
	Total (%)	Low (<2h)	Medium (2–4h)		High (>4h)
Overall	449 (100)	400 (89.1)	47 (10.5)	2 (0.4)	
Sex					0.805
Male	318 (70.8)	284 (89.3)	33 (10.4)	1 (0.3)	
Female	131 (29.2)	116 (88.5)	14 (10.7)	1 (0.8)	
Age					0.826
Below 30	409 (91.1)	365 (89.2)	42 (10.3)	2 (0.5)	
Above 30	40 (8.9)	35 (87.5)	5 (12.5)	0 (0)	
Education					0.533
College or below	56 (12.5)	48 (85.7)	8 (14.3)	0 (0)	
Above college	393 (87.5)	352 (89.6)	39 (9.9)	2 (0.5)	
Family members					0.533
1-3 person	58 (12.9)	53 (91.4)	5 (8.6)	0 (0)	
4-5 person	306 (68.2)	269 (87.9)	36 (11.8)	1 (0.3)	
Above 6 person	85 (18.9)	78 (91.8)	6 (7.1)	1 (1.2)	
Residence					0.684
Rural	118 (26.3)	105 (89.0)	13 (11.0)	0 (0)	
Urban	331 (73.7)	295 (89.1)	34 (7.6)	2 (0.6)	
Occupation					0.759
Unemployed	20 (4.5)	18 (90.0)	2 (10.0)	0 (0)	
Student	360 (80.2)	323 (89.7)	35 (9.7)	2 (0.6)	
Employed	69 (15.4)	59 (85.5)	10 (14.5)	0 (0)	
Monthly income (BDT)					0.878
0–10000	370 (82.4)	330 (89.2)	38 (10.3)	2 (0.5)	
10001–20000	27 (6.0)	25 (92.6)	2 (7.4)	0 (0)	
Above 20000	52 (11.6)	45 (86.5)	7 (13.5)	0 (0)	
Daily working hours					0.496
Full-time	110 (24.5)	101 (91.8)	9 (8.2)	0 (0)	
Part-time	128 (28.5)	115 (89.8)	13 (10.2)	0 (0)	
Casual	211 (47.0)	184 (87.2)	25 (11.8)	2 (0.9)	
Health problem					0.095
Not at all	253 (56.3)	229 (90.5)	23 (9.1)	1 (0.4)	
A little	130 (29.0)	115 (88.5)	15 (11.5)	0 (0)	
Sometimes	32 (7.1)	29 (90.6)	2 (6.3)	1 (3.1)	
Often	34 (7.6)	27 (79.4)	7 (20.6)	0 (0)	
Media distraction					0.027 ^a
Not at all	45 (10.0)	38 (84.4)	6 (13.3)	1 (2.2)	
A little	169 (37.6)	156 (92.3)	13 (7.7)	0 (0)	
Sometimes	152 (33.9)	139 (91.4)	12 (7.9)	1 (0.7)	
Always	83 (18.5)	67 (80.7)	16 (19.3)	0 (0)	
Income from social media					0.459
No	427 (95.1)	382 (89.5)	43 (10.1)	2 (0.5)	
Yes	22 (4.9)	18 (81.8)	4 (18.2)	0 (0)	

^a significant at 0.05 level; ** significant at 0.01 level; ***significant at 0.001 level.

3.2. Media exposure

Table 1 summarizes the relationship between daily total time exposure to media (TME) and the demographic characteristics of the respondents. The prevalence of low, medium, and high exposure to media was 44.5%, 39.2%, and 16.3%, respectively. The results further indicate that sex, daily working hours, health problem, and media distraction were significantly related to TME. The proportion of high TME was lower among males (13.2%) compared to females (23.7%) ($p < 0.01$). Participants who worked part-time (21.1%) had a higher proportion of high TME than full-time workers (5.5%) ($p < 0.001$). Respondents who often faced health problems had a higher proportion (35.3%) of high TME than others ($p < 0.01$). The same was true for participants who were always distracted by media usage, with a higher proportion (33.9%) of high TME ($p < 0.001$).

Table 2 shows the relationship between the respondents' daily social media exposure (SME) and their demographic traits. The occurrence of low, medium, and high SME was 89.1%, 10.5%, and 0.4% respectively. The findings suggest that only media distraction had a significant relationship with SME ($p < 0.05$). Respondents who were not disturbed by media use had a significantly higher percentage of high SME compared to others.

Table 3 presents the relationship between daily exposure to electronic media (SME) and the demographic factors of the respondents. The distribution of low, medium, and high levels of EME was 96.4%, 2.7%, and 0.9% respectively. The findings demonstrate a significant association between media distraction and income from social media with SME. Respondents who were not affected by media distraction had a higher proportion of high EME compared to those who were distracted ($p < 0.01$). Additionally, those who earned income through social media had a higher proportion of high EME compared to those who did not ($p < 0.001$).

Table 4 presents an overview of media usage intensity and anxiety prevalence during the COVID-19 pandemic. Among the five

Table 3
Descriptive statistics of the respondents and electronic media exposure (EME) (n = 449).

Variables	EME, n (%)				p-value
	Total (%)	Low (<2h)	Medium (2–4h)	High (>4h)	
Overall	449 (100)	433 (96.4)	12 (2.7)	4 (0.9)	
Sex					0.615
Male	318 (70.8)	305 (95.9)	10 (3.1)	3 (0.9)	
Female	131 (29.2)	128 (97.7)	2 (1.5)	1 (0.8)	
Age					0.117
Below 30	409 (91.1)	396 (96.8)	9 (2.2)	4 (1.0)	
Above 30	40 (8.9)	37 (92.5)	3 (7.5)	0 (0)	
Education					0.677
College or below	56 (12.5)	55 (98.2)	1 (1.8)	0 (0)	
Above college	393 (87.5)	378 (96.2)	11 (2.9)	4 (1.0)	
Family members					0.479
1-3 person	58 (12.9)	56 (96.6)	2 (3.4)	0 (0)	
4-5 person	306 (68.2)	293 (95.8)	10 (3.3)	3 (1.0)	
Above 6 person	85 (18.9)	84 (98.8)	0 (0)	1 (1.2)	
Residence					0.358
Rural	118 (26.3)	116 (98.3)	1 (0.8)	1 (0.8)	
Urban	331 (73.7)	317 (95.8)	11 (3.3)	3 (0.9)	
Occupation					0.220
Unemployed	20 (4.5)	19 (95.0)	0 (0)	1 (5.0)	
Student	360 (80.2)	348 (96.7)	9 (2.5)	3 (0.8)	
Employed	69 (15.4)	66 (95.7)	3 (4.3)	0 (0)	
Monthly income (BDT)					0.465
0–10000	370 (82.4)	357 (96.5)	9 (2.4)	4 (1.1)	
10001–20000	27 (6.0)	27 (100.0)	0 (0)	0 (0)	
Above 20000	52 (11.6)	49 (94.2)	3 (5.8)	0 (0)	
Daily working hours					0.704
Full-time	110 (24.5)	106 (96.4)	4 (3.6)	0 (0)	
Part-time	128 (28.5)	124 (96.9)	3 (2.3)	1 (0.8)	
Casual	211 (47.0)	203 (96.2)	5 (2.4)	3 (1.4)	
Health problem					0.340
Not at all	253 (56.3)	244 (96.4)	8 (3.2)	1 (0.4)	
A little	130 (29.0)	127 (97.7)	1 (0.8)	2 (1.5)	
Sometimes	32 (7.1)	30 (93.8)	1 (3.1)	1 (3.1)	
Often	34 (7.6)	32 (94.1)	2 (5.9)	0 (0)	
Media distraction					0.001**
Not at all	45 (10.0)	38 (84.4)	5 (11.1)	2 (4.4)	
A little	169 (37.6)	166 (98.2)	3 (1.8)	0 (0)	
Sometimes	152 (33.9)	149 (98.0)	2 (1.3)	1 (0.7)	
Always	83 (18.5)	80 (96.4)	2 (2.4)	1 (1.2)	
Income from social media					0.000***
No	427 (95.1)	414 (97.0)	11 (2.6)	2 (0.5)	
Yes	22 (4.9)	19 (86.4)	1 (4.5)	2 (9.1)	

*significant at 0.05 level; ** significant at 0.01 level; ***significant at 0.001 level.

Table 4
Prevalence of media use intensity and anxiety during COVID-19 (n = 449).

Different media	n (%)	Intensity			Anxiety	p-value
		Total	Low (<2h)	Medium (2–4h)		
Social media						
Facebook	442 (98.44)	258 (58.37)	133 (30.09)	51 (11.54)	113 (25.57)	0.003^a
YouTube	417 (92.87)	294 (70.50)	107 (25.66)	16 (3.84)	103 (24.70)	0.391
LinkedIn	254 (56.57)	228 (89.76)	22 (8.66)	4 (1.57)	57 (22.44)	0.393
WhatsApp	318 (70.82)	285 (89.62)	28 (8.81)	5 (1.57)	85 (26.73)	0.411
IMO	183 (40.76)	177 (96.72)	3 (1.64)	3 (1.64)	41 (22.40)	0.185
Electronic media						
TV	209 (46.55)	194 (92.82)	10 (4.78)	5 (2.39)	49 (23.44)	0.195
Internet	221 (49.22)	194 (87.78)	23 (10.41)	4 (1.81)	52 (23.53)	0.084

^a significant at 0.01 level.

social media platforms, Facebook had the highest usage rate (98.44%), followed by YouTube (92.87%) and WhatsApp (70.82%). Similarly, Facebook exhibited the highest prevalence (11.54%) of high media usage intensity (more than 4 h daily), with YouTube (3.84%) and IMO (1.64%) following suit. In terms of electronic media, the Internet had the highest usage rate (49.22%), while TV had the highest prevalence (2.39%) of high media usage intensity.

Concerning the prevalence of anxiety among media platforms, WhatsApp users (26.73%) had the highest proportion of anxiety followed by Facebook (25.57%) and YouTube (24.70%). However, only Facebook usage intensity and anxiety was statistically significant ($p < 0.01$).

Table 5
Prevalence and predictors of anxiety disorder among respondents (n = 449).

Variables	Prevalence (%)	OR	95% CI	p-value
Overall (449)	114 (25.38)			
Sex				
Male (318)	66 (20.8)	Ref.		
Female (131)	48 (36.6)	2.26	1.37–3.74	0.001**
Daily working hours				
Full-time (120)	26 (23.6)	Ref.		
Part-time (128)	26 (20.3)	0.51	0.25–1.04	0.065
Casual (211)	62 (29.4)	1.13	0.62–2.03	0.684
Health problem				
Not at all (253)	40 (15.8)	Ref.		
A little (130)	45 (34.6)	2.18	1.27–3.70	0.004**
Sometimes (30)	11 (34.4)	2.35	1.12–5.61	0.049*
Often (32)	18 (52.9)	4.87	2.17–10.91	0.000***
Media distraction				
Not at all (45)	10 (22.2)	Ref.		
A little (169)	22 (13.0)	0.60	0.23–1.53	0.292
Sometimes (152)	49 (32.2)	1.80	0.73–4.41	0.202
Always (83)	33 (39.8)	2.37	0.90–6.24	0.080
Income from social media				
No (427)	108 (25.3)	Ref.		
Yes (22)	6 (27.3)	1.35	0.43–4.22	0.605
Facebook usages intensity				
Low (258)	54 (20.93)	Ref.		
Medium (133)	36 (27.06)	1.16	0.11–11.56	0.895
High (51)	23 (45.09)	1.86	0.16–20.61	0.613
Total Media Exposure (TME)				
Low (200)	39 (19.5)	Ref.		
Medium (176)	45 (25.6)	1.38	0.84–2.27	0.194
High (73)	30 (41.1)	2.75	1.40–5.14	0.001**
Social Media Exposure (SME)				
Low (400)	96 (24.0)	Ref.		
Medium (47)	17 (36.2)	1.08	0.82–1.08	0.829
High (2)	1 (50.0)	0.90	0.01–53.70	0.962
Electronic Media Exposure (EME)				
Low (433)	107 (24.7)	Ref.		
Medium (12)	5 (41.7)	1.94	0.56–6.63	0.290
High (4)	2 (50.0)	2.81	0.15–49.57	0.480

OR, Odd Risk; CI, Confidence Interval; *significant at 0.05 level; ** significant at 0.01 level; ***significant at 0.001 level.

3.3. Prevalence of anxiety and its predictors

Table 5 summarizes the findings regarding anxiety prevalence and its association with demographic factors among the respondents. The study discovered that the overall prevalence of anxiety was 25.38%, with female respondents, those with health problems, and those who were easily distracted by media having a higher percentage of anxiety. In the multivariate analysis, the results of Pearson's chi-square test of independence for TME, SME, and EME were utilized to assess their impact on anxiety levels (Table 4). The findings revealed that participants with high TME were significantly more likely to experience anxiety (OR = 2.75, 95% CI = 1.40–5.14, $p < 0.01$). Moreover, females were 2.26 times more likely to experience anxiety than males (95% CI = 1.37–3.74, $p < 0.01$), and participants with health problems were more likely to develop anxiety than those without no health problems (Table 5).

4. Discussion

4.1. Summary of the main findings

The prevalence of media exposure during the second wave of lockdown in Bangladesh, suggests that a significant number of individuals dedicated considerable time to media-related activities. The higher prevalence of low total media exposure (44.5%) suggests that a majority of individuals were able to maintain a balanced approach to their media consumption during the lockdown period. However, the substantial proportions of individuals with medium (39.2%) and high (16.3%) total media exposure raise concerns about potential negative consequences associated with excessive media use. One plausible explanation for this trend could be the limited opportunities for social interaction and entertainment during the lockdown. With people largely confined to their homes, media platforms may have served as an avenue for escapism and a means to stay connected with the outside world. Additionally, the media likely played a crucial role in disseminating information and updates about the pandemic, contributing to increased media consumption [49]. The widespread availability of technology and the presence of diverse media platforms may have further contributed to the higher prevalence of high total media exposure. The ease of access to media-related activities, such as social media, online gaming, and streaming services [50], may have prompted individuals to spend more time engaging in these activities compared to pre-pandemic circumstances.

Our study presented a unique finding that the prevalence of mental anxiety during the second wave of lockdown was relatively low in comparison to previous studies conducted in Bangladesh. Notably, our finding is higher than the most recent nationwide survey by the National Institute of Mental Health, which reported a prevalence of mental health issues at 16.8% [51]. However, the prevalence has only slightly increased by 0.07% from the 2003–2005 survey, which reported an anxiety prevalence of 2.9% in Bangladesh [52]. The World Health Organization's study suggested that 4.4% of the population had an anxiety disorder [53]. Our study contradicts earlier studies that reported a high prevalence of anxiety during COVID-19 in Bangladesh [54–57]. A systematic review study with 40 eligible articles reported a pooled prevalence of anxiety was 47% which is also higher than the current study [58]. Another study conducted four months after the COVID-19 pandemic in Bangladesh reported 46% of anxiety among the general population [59]. Some possible factors could be attributable to the low prevalence of anxiety during the second wave lockdown among Bangladeshi people including increased awareness and preparation among the general population, effective public health messaging and communication, and social support networks. Additionally, there may have been a decreased level of uncertainty and fear associated with the second wave of lockdown, as people may have been more prepared and experienced with the lockdown measures after the first wave. Further, the government of Bangladesh has implemented effective measures to control the spread of the virus, such as lockdowns and mass vaccination campaigns. This could have helped to alleviate anxiety among the population. A study found that vaccinated participants in Bangladesh were protective against developing any mental illness [60].

Our findings from media use intensity and anxiety level reveal that Facebook users had a high anxiety level than other users. This might be attributed to individuals' inclination to selectively provide a managed depiction of their life on Facebook, highlighting achievements and positive experiences. Such social comparison, where individuals participate in negative self-evaluations by comparing themselves to others, resulting in emotions of inadequacy and fear [61]. Furthermore, the algorithm used by Facebook often prioritizes content that elicits strong emotional reactions, including negative emotions such as envy, anger, or anxiety [62]. Additionally, it's worth noting that information shared on platforms like Facebook may lack thorough verification and comparison with other sources, potentially creating a misleading environment around certain topics. The continuous consumption of dubious content on this platform has the capacity to worsen the mental health of young people [63,64].

Our investigation unveiled that individuals who experienced high total media exposure time experienced a greater level of mental anxiety during the COVID-19 outbreak. Our results align with a previous study conducted during the initial stage of the pandemic, which found that those who spent over 4 h per day consuming social media had a heightened level of anxiety among the general population of Bangladesh [42]. Another early phase study conducted in Wuhan, China, reported frequently social media exposure (SME) was positively associated with high odds of anxiety [23]. One possible reason could be that the second wave in Bangladesh had been more severe, with higher infection rates, more deaths, and increased uncertainty about the future [65], which may have led to increased media coverage and public awareness. This heightened awareness may have caused individuals to perceive the pandemic as more threatening, leading to increased anxiety. Moreover, given the severity of the second wave of lockdown, there may have been a greater reliance on media for information, given that traditional sources of information, such as face-to-face interactions with healthcare professionals, may have been limited. As a result, individuals may have been exposed to more media content, leading to increased anxiety. Furthermore, the prolonged duration of the pandemic and the subsequent lockdown measures may have also contributed to increased anxiety levels. As people remained isolated at home, they may have felt more isolated and disconnected from

their usual routines and support systems, leading to feelings of loneliness and anxiety [66].

Our study found that female participants were more likely to develop anxiety disorder. This finding is in line with previous studies that found a higher incidence of anxiety among females compared to their counterparts [67,68]. The observed sex gap in the frequency of mental health difficulties during the pandemic could be related to the disproportionate effects of the social and economic implications on women [69]. Women may have greater financial difficulties than men due to variables such as lower earnings, fewer savings, and less steady employment [70]. Moreover, it is important to consider the differential impact of media coverage during the pandemic, particularly on females. Media reports often highlighted issues such as domestic violence, health concerns, and sex-based discrimination, which may have intensified anxiety levels among women [71]. Furthermore, societal and cultural norms may also significantly influence these dynamics. In developing countries like Bangladesh, women are expected to shoulder a heavier burden of domestic responsibilities, encompassing tasks such as cooking and cleaning. Moreover, they are expected to perform caregiving roles like caring for children or elderly family members, maintain household affairs, and navigate their careers. The closure of educational institutions amid the COVID-19 pandemic, compounded these responsibilities. Such societal and cultural expectations can generate heightened stress and pressure for women, potentially elevating their susceptibility to anxiety and depression [76–78]. Individuals with pre-existing health problems were associated with anxiety disorder during the COVID-19 pandemic. These findings were congruent with previous studies [72–74]. This increased risk can be attributed to their vulnerability to severe COVID-19 symptoms and concerns about the potential consequences of contracting the virus to their existing health condition. The media's extensive coverage of the pandemic may further amplify anxiety and stress levels among this group [75].

Our study on the association between media exposure and mental health during the COVID-19 in Bangladesh has significant implications for psychology and social science. It adds to the growing body of knowledge pertaining to the psychological consequences of media consumption, particularly within the context of global crises. These findings highlight the significance of media role in shaping individuals' emotional well-being, aligning with established social psychological research on the influence of external stimuli, such as media, on mental states. This allows social psychologists to look further into the psychological mechanisms through which media exposure contributes to anxiety. Furthermore, the exploration of gender dynamics aids social psychologists in understanding the intricate interplay between gender roles, media exposure, and anxiety, thereby shedding light on how societal factors impact emotional health in this region. Social psychologists may further dive deeper into the psychosocial components of health-related anxiety, investigating how people deal with health issues and the effect of media exposure in worsening or easing anxiety in this setting. Understanding the association between media exposure and mental health outcomes provides important insights into the underlying psychological mechanisms and supports the development of therapies and measures to reduce detrimental repercussions. Furthermore, these findings can help researchers to understand how the media influences public views, attitudes, and behaviors during times of crisis. Investigating the effects of media exposure on mental health outcomes throws light on the role of information distribution and media in mental health outcomes. This finding has implications for communication tactics, public health campaigns, and policy-making in similar situations aiming at increasing mental well-being. Furthermore, by focusing on the specific context of Bangladesh, the study provides valuable insights into the experiences and issues that people encounter in this setting. This localized perspective adds to the body of cross-cultural research in psychology and the social sciences, emphasizing the need for context-specific interventions and approaches to addressing mental health challenges.

4.2. Limitations of the study

The current study has some limitations that need to be taken into account when interpreting the findings. Firstly, the sample size was relatively small and participants were recruited through convenience sampling, which might limit the generalizability of the results to the larger population. Moreover, the recruitment of participants via social media could have resulted in a self-selection bias, further limiting the representativeness of the sample. Additionally, due to the use of a cross-sectional design, the study cannot establish a cause-and-effect relationship between the COVID-19 pandemic and mental health outcomes. Future longitudinal studies are needed to investigate the temporal associations between pandemic exposure and mental health outcomes. The study relied on self-reported symptoms of anxiety and depression, rather than clinical diagnoses by healthcare professionals. This reliance on self-reported measures could have led to the misclassification of participants' mental health status. Furthermore, our study was conducted during the COVID-19 pandemic, potentially influencing media-related behaviors, especially among students, who heavily relied on the internet for education due to school closures; future research with larger, more homogenous samples and pandemic-specific considerations may provide a more comprehensive understanding of their impact on mental health. Lastly, the study did not collect data on COVID-19 exposure, such as whether participants had contracted the virus or had close contacts who did, which could have provided crucial information for understanding mental health outcomes during the pandemic.

5. Conclusion

This study sheds light on the intricate relationship between media exposure and mental health outcomes amidst the COVID-19 crisis in Bangladesh. The results indicate that exposure to media during the pandemic can significantly impact an individual's mental health, with anxiety being the most commonly reported symptom. Interestingly, anxiety was not widely prevalent among the study participants, with only one-fourth of respondents reporting such experiences during the second wave of the pandemic. The study highlights that individuals with high levels of total media exposure (TME) were more prone to anxiety than those with low or medium exposure levels. This finding highlights the crucial role that the quantity and quality of media exposure can play in shaping mental health outcomes during pandemics. Moreover, the study reveals that gender and health status are also significant predictors of anxiety,

with women and those with pre-existing health conditions being at higher risk of experiencing anxiety. Therefore, this emphasizes the need for targeted mental health interventions that cater to the unique needs and vulnerabilities of diverse subgroups in the population.

Author contribution statement

Md. Najmus Sayadat Pitol: Conceptualization, Methodology, Writing-Original draft, review and editing.
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 Chameli Saha: Writing-review and editing.

Data availability statement

Data will be made available on request.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.heliyon.2023.e20371>.

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