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RESEARCH ARTICLE

Social media and depression among young adults in Bangladesh: Patterns, predictors, and implications

Mst Rahnuma Haque[1] | Md Nazrul Islamal Mondal | Moynul Haque[1] | Mohammad Mazharul Islam[2] | Md Hasanul Kabir Sowmik[1] | Shela Parvin[1] | Mst Nadira Parvin[3]

[1]Department of Population Science and Human Resource Development, University of Rajshahi, Rajshahi, Bangladesh
[2]Department of Finance, College of Business, King Abdulaziz University, Rabigh, Saudi Arabia
[3]Department of Epidemiology, Bangladesh University of Health Sciences, Dhaka, Bangladesh

Abstract

Background: Consequences have arisen about the impact of growing social media use on users' psychological adverse well-being. Especially in young adults, it can increase feelings of loneliness, inadequacy, and social comparison. This study examines the role of social media in contributing to depression among young adults in Rajshahi city, Bangladesh.

Methods: A cross-sectional study was conducted among 450 young adults in Rajshahi city, Bangladesh, using a structured questionnaire administered through face-to-face interviews and a purposive sampling technique. The Patient Health Questionnaire-9 (PHQ-9) was used to assess respondents' depression status. Univariate and multivariate logistic regression were used to identify the factors of depression.

Results: Over half of the respondents (57.8%) experienced depression, predominantly at moderate to severe levels, with higher rates observed among younger individuals (21–24 years) and females. Depression status was found to be significantly associated with respondents' age, social media usage, time spent on social media, and following specific types of accounts such as celebrities or models, gaming, and animals or birds. Ultimately, Facebook usage (odds ratio (OR) 2.1; 95% confidence interval (CI) 0.9–5.0), WhatsApp usage (OR 0.5; 95% CI 0.3–0.7), and following accounts related to celebrities or models (OR 1.5; 95% CI 0.9–2.6), gaming (OR 1.9; 95% CI 1.0–3.6) were identified as significant factors of depression among young adults.

Conclusion: More than half of young adults had depression. Social media usage, online time, and following accounts such as celebrities, models, and gaming are key contributors, emphasising the need for targeted mental health interventions, awareness campaigns, and digital literacy programs.

Key messages

Social media usage is positively associated with depression, particularly among young adults in Rajshahi city, Bangladesh. Age and time spent on social media significantly increase the likelihood of depression. Depression levels vary based on the platforms used, the accounts followed, and the content consumed. Platforms like Facebook, X, and Pinterest are linked to higher depression rates.

Correspondence
Md Nazrul Islam Mondal
nazrulislam@ru.ac.bd

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C: Sandeep
0000-0002-5249-5397
E: Muhammad Kamal Uddin
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Introduction

With social media's smooth integration into our daily lives, a large segment of the world's population now relies heavily on it for information, communication, and enjoyment. Social media once addressed as a revolutionary tool for global connectivity and communication, is now increasingly being questioned for its potential negative impact on mental health [1]. Recently, there has been growing concern about the widespread influence of platforms designed to facilitate interaction and information sharing [2]. Social media engagement's quick pleasure contributes to addictive use. This addictive use of social media, which is characterised by an overwhelming concern for social media, an insatiable urge to use or log in to social media, and a commitment to social media, takes up so much time and energy that it interferes with other significant aspects of life. Numerous researches on addiction and the effects of social media have been done. The results suggest that extended usage of social media may be linked to problems like stress, anxiety, depression, loneliness, low self-esteem, and poor sleep quality [3–14].

Social media provides an idealized picture of people's lives, encouraging ongoing social comparison. Young people may compare themselves to others, resulting in low self-esteem and inadequacy [15]. According to many researchers, people are becoming the victims of lower self-esteem (which ultimately results in self-loathing) because of the steep increase in social media usage [16]. Moreover, constant pressure to uphold an idealized online identity leads to fear of missing out (FOMO) and an overpowering need to present a flawless life [17]. The genuine difficulties that young adults encounter are frequently hidden by this facade, making it challenging to ask for help. Additionally, spending too much time on social media might lead to a sedentary lifestyle associated with less restful sleep [18].

The nighttime social media usage can impact users' sleep hygiene by lengthening their sleep onset latency and shortening their sleep amount [19, 20]. Individuals on social media might be exposed to a steady stream of information, including unpleasant news, comparisons to others, and cyber bullying, which causes stress and anxiety levels to rise and makes it more difficult to relax and go to sleep [21]. A survey revealed that extensive social media use, with most students spending over four hours daily across multiple platforms, significantly impacts their mental health [22]. Another study found a significant positive relationship between social media use and depression among college students [23]. In this line Mamun *et al.* [24]. conducted a pilot study in Bangladesh to explore the connection between 'Facebook addiction' and its supporting factors, using data from a sample of 300 students from the University of Dhaka, Bangladesh. Their findings showed that depression is a major comorbid factor among the students, and the risk of Facebook addiction emerged as a significant concern. Again, the National Mental Health Survey (NMHS) of Bangladesh 2019 found that the overall prevalence of mental disorders among individuals aged 18 and above was 18.7%, with higher rates observed among urban youth [25].

There is a lack of comprehensive studies on how specific patterns of social media usage affect mental health outcomes. These patterns include platform preferences, content types, and interaction behaviors. Most existing research focuses on individual platforms or general usage. Limited studies explore cultural and regional differences, such as in Bangladesh. The psychological effects of social media on young adults, including FOMO, social comparison, and addiction, are not fully addressed. Therefore, this study aims to investigate the impact of social media on depression among adults in Rajshahi city, Bangladesh.

This study investigated the impact of social media use on depression among young adults in Rajshahi city, Bangladesh, considering multiple social media platforms. It found a strong link between using multiple platforms and experiencing depressive symptoms, with high social media activity correlating with increased mental health issues. Increased social media use, especially across multiple platforms, was shown to negatively affect students' mental health, contributing to depression. These findings can inform the development of preventive strategies for depression. Therefore, the primary research question of this study was: 'Does social media use contribute to depression among young adults in Bangladesh?' The study hypothesises that higher social media engagement is associated with increased depressive symptoms.

Methods

Study participants, area, and sampling technique

A cross-sectional study among young adults (both students and non-students) aged 18–30 years in Rajshahi city, Bangladesh, who have access to the internet, were selected as respondents. Data were collected from 500 respondents through purposively face-to-face interviews using a structured questionnaire between October 2023 and February 2024. Depression status was assessed using the Patient Health Questionnaire 9 items (PHQ–9) [26], and the sampling method was chosen due to time and financial constraints. The survey excluded individuals who were physically disabled, or provided incomplete or inconsistent responses.

Sample size

A total of 500 participants were surveyed, and 450 valid responses were included in the final analysis. However, this size far exceeded the minimum required number 237 which was calculated using the formula: $n=z^2pq/d^2$ [27] considering prevalence as 18.7% [25] with 95% confidence level and 5% margin of error.

Procedure for gathering data

The questionnaire assessed social media use by focusing on several aspects: the average daily time spent on social media, preferred platforms (*e.g.*, Facebook, Instagram), types of content engaged with (*e.g.*, text, images, videos), and whether participants primarily created or consumed content. It also explored the purpose of use (*e.g.*, social connection, entertainment, news) and frequency of access (*e.g.*,

multiple times a day, daily, or weekly). The self-administered questionnaires were distrusted to participants. The purpose of the study was explained, and consent was obtained. The ethical approval was granted by the ethics committee of the University of Rajshahi, Bangladesh. Demographic characteristics (age and sex), the names of the social media sites the respondents used, time spent, the type of accounts/contents they follow on social media, etc., and a standard scale (PHQ-9) to assess depression were included in the questionnaire.

Patient health questionnaire-9 items

The PHQ-9 is a widely used, validated, self-reported instrument to screen and assess the severity of depression. It consists of nine items based on the Diagnostic and statistical manual of mental disorders, 4th Edition (DSM-IV) [28] criteria for major depressive order, with each question graded on a 4-point Likert scale to measure how often depressive symptoms were felt in the past two weeks [28]. Responses range from 0 (not at all) to 3 (nearly every day), with a total score ranging from 0 to 27. The cut-off scores for diagnosing depression are as follows: 0–4 for minimal or no depression, 5–9 for mild depression, 10–14 for moderate depression, 15–19 for moderately severe depression, and 20–27 for severe depression [29]. Higher scores indicate greater severity of depression. This investigation used a score of ≥10 to identify depression, utilising the Bengali version of the questionnaire [29, 30]. The format was confirmed to be suitable, with language levels that participants could understand. The survey was conducted in English and Bengali using Triandis's [31] back-to-back translation method.

The PHQ-9 not only helps assess the presence and severity of depressive symptoms but also includes a final question on the impact of symptoms on daily functioning, enhancing its clinical utility. It is commonly used in both clinical and research settings to monitor treatment progress or identify at-risk populations. Numerous studies have validated the PHQ-9 across diverse populations and cultural contexts, confirming its reliability and sensitivity in detecting depression symptoms [29].

Statistical analysis

Gender, age, social media platforms, time spent on social media, *etc.*, were the explanatory variables, and respondents' depression status was the outcome variable. Variable were described using frequency and percentage. Chi-square test was used to examine the association between depression, and demographic and social media related variables. The Cronbach's [32] was used to assess the internal consistency or reliability of the test items of PHQ-9. A commonly accepted threshold, , indicates acceptable reliability, though this can vary depending on the context and the measured construct. Based on a study [33], some psychometric indicators (mean, standard deviation, Cronbach's and inter-item correlation matrix for each of the PHQ-9 items) were calculated for testing validity and reliability of PHQ-9. Significantly associated variables determined by Chi-square test were considered as factors for the binary logistic regression model to explore the effects of demographic and social media related factors on depression status. Later on, all factors were entered into the model for adjustment. Adjusted odds ratio (aOR) with 95% confidence interval (CI) were calculated to explain the determinants of depression. The data were analysed using SPSS software (version 26.0). $P<0.05$ was considered as statistically significant.

Table 1 Background characteristics of the respondents (n=450)

Variables	Number (%)
Age (in years)	
≤20	181 (40.2)
21–24	219 (48.7)
≥25	50 (11.1)
Gender	
Male	281 (62.4)
Female	169 (37.6)
Usage of social media	
Facebook	420 (93.3)
YouTube	364 (80.9)
X	57 (12.7)
Instagram	161 (35.8)
Pinterest	50 (11.1)
WhatsApp	131 (29.1)
Time spent on social media (in hours)	
1–5	264 (58.7)
6–10	159 (35.3)
≥11	27 (6.0)
Is it (the amount of time spent on social media) good for health?	
Yes	57 (12.7)
No	393 (87.3)
Follows on social media	
Family/friends	325 (72.2)
News	324 (72.0)
Celebrity	138 (30.7)
Gaming accounts	80 (17.8)
Funny accounts	143 (31.8)
Animals/birds	114 (25.3)
WhatsApp	96 (21.3)
Severity of depression	
Minimal depression (0–4)	89 (19.8)
Mild depression (5–9)	101 (22.4)
Moderate depression (10–14)	92 (20.4)
Moderately severe depression (15–19)	90 (20.0)
Severe depression (≥20)	78 (17.3)
Depression status	
Absent (≤9)	190 (42.2)
Present (≥10)	260 (57.8)

Results

Background characteristics of the respondents are presented in Table 1. The sample is primarily young adults, with the largest age group (48.7%) between 21 and 24 years, followed by those aged 20 or younger (40.2%), and a smaller proportion aged 25 or older (11.1%). Males constitute 62.4% of the respondents, while females make up 37.6%, indicating a gender disparity. Social media usage is widespread, with nearly all respondents using Facebook (93.3%) and a high proportion on YouTube (80.9%). Other platforms like Instagram (35.8%) and WhatsApp (29.1%) are also popular, while Twitter (12.7%) and Pinterest (11.1%) are less commonly used. Most respondents spend 1–5 hours daily on social media (58.7%), though fewer spend 6–10 hours (35.3%) or 11 or more hours (6.0%). A significant majority (87.3%) believe their social media use negatively affects their health, with only 12.7% considering it beneficial. Family/friends

Table 2 Mean, standard deviation, item-total correlation, Cronbach's alpha if item deleted, Skewness and Kurtosis of the patient health questionnaire-9 (PHQ-9)

Items	Mean	SD[a]	Corrected item-total correlation	Cronbach's α if the item deleted	Skewness	Kurtosis
I_1	1.2	1.2	0.7	0.8	0.5	-1.4
I_2	1.2	1.2	0.6	0.8	0.5	-1.3
I_3	1.4	1.2	0.5	0.8	0.3	-1.3
I_4	1.3	1.2	0.5	0.8	0.4	-1.5
I_5	1.5	1.3	0.5	0.8	0.1	-1.7
I_6	1.1	1.3	0.6	0.8	0.6	-1.4
I_7	1.3	1.3	0.7	0.8	0.3	-1.6
I_8	1.3	1.3	0.7	0.8	0.3	-1.6
I_9	1.2	1.2	0.6	0.8	0.4	-1.4

[a]SD indicates Standard deviation; I_1: Little interest or pleasure in doing things, feeling down, depressed, or hopeless; I_2: Trouble falling or staying asleep, or sleeping too much; I_3: Feeling tired or having little energy; I_4: Poor appetite or overeating; I_5: Feeling bad about yourself- or that you are a failure or have let yourself or your family down; I_6: Trouble concentrating on things, such as reading the newspaper or watching television; I_7: Moving or speaking so slowly that other people could have noticed; I_8: Or the opposite- being so fidgety or restless that you have been moving around a lot more than usual; I_9: Thoughts that you would be better off dead, or of hurting yourself in some way.

(72.2%) and news/entertainment sources (72.0%) are the most common follows, while celebrity/model (30.7%), funny accounts (31.8%), and animals/birds (25.3%) are also popular, though less so. Depression is notably prevalent, with more than half of the sample (57.8%) reporting some level of depressive symptoms, ranging from mild (22.4%) to severe (17.3%).

Mean scores for each item are moderate (1.1 to 1.5), and corrected item-total correlations indicate good internal consistency. Cronbach's for most items is high, between 0.82 and 0.84, confirming the questionnaire's reliability. Skewness and kurtosis values are within acceptable ranges, supporting the items' suitability for psychometric analysis (Table 2).

Inter-item correlations for the PHQ-9, revealing moderate correlations (0.2 to 0.5) between items. The strongest correlation is found between items such as 'Moving or speaking slowly' and 'Being restless or fidgety' (1.0), suggesting that these items may capture similar depressive symptoms. Overall, these correlations indicate that while some items are related, each item assesses distinct aspects of depression (Table 3).

The results of Chi-square test reveal significant associations between depression status and several factors. Younger adults, especially those aged 21–24, show higher depression rates, while females report slightly more depression than males, though this is not statistically significant. Social media usage patterns indicate that Facebook, Twitter, and Pinterest users are more likely to report depression, with prolonged use (6–10 hours or more) linked to higher depressive symptoms. Additionally, following celebrity/model, gaming, funny, and animal/bird accounts is associated with increased depression, highlighting how both social media habits and content type may affect mental health (Table 4).

The results of the logistic regression analysis, identifying factors associated with increased odds of depression. Facebook users are over twice as likely to report depressive symptoms (aOR 2.1; 95% CI 0.9–5.0), while WhatsApp use appears protective, reducing the likelihood of depression (aOR 0.5; 95% CI 0.3–0.7). Following celebrities or gaming accounts also increases the odds of experiencing depression (aOR 1.6; 95% CI 0.9–2.6 and aOR 1.9; 95% CI 1.0–3.6, respectively). These findings underscore the impact of both platform choice and content type on mental health, particularly regarding depressive symptoms. Finally, the binary logistic model explains 15.6% (Nagelkerke R^2=0.2) of the variability in depression status based on the explanatory variables (Table 5).

Table 3 Inter-item correlation matrix for the patient health questionnaire-9 (PHQ-9)

Items	I_1	I_2	I_1	I_3	I_4	I_5	I_6	I_7	I_8
I_1	1.0								
I_2	0.4	1.0							
I_3	0.3	0.4	1.0						
I_4	0.3	0.3	0.4	1.0					
I_5	0.3	0.3	0.4	0.4	1.0				
I_6	0.3	0.5	0.4	0.3	0.3	1.0			
I_7	0.3	0.4	0.3	0.3	0.3	0.5	1.0		
I_8	0.3	0.4	0.3	0.3	0.3	0.5	1.0	1.0	
I_9	1.0	0.4	0.3	0.3	0.2	0.3	0.3	0.3	1.0

I_1: Little interest or pleasure in doing things, feeling down, depressed, or hopeless; I_2: Trouble falling or staying asleep, or sleeping too much; I_3: Feeling tired or having little energy; I_4: Poor appetite or overeating; I_5: Feeling bad about yourself- or that you are a failure or have let yourself or your family down; I_6: Trouble concentrating on things, such as reading the newspaper or watching television; I_7: Moving or speaking so slowly that other people could have noticed; I_8: Or the opposite- being so fidgety or restless that you have been moving around a lot more than usual; I_9: Thoughts that you would be better off dead, or of hurting yourself in some way.

Discussion

The usage of social media into individuals' daily lives has had a significant impact on mental health. Identifying how social media affects, especially young adults, is essential. This study has attempted to find out some factors that might be associated with depression among young adults. This study identified that 57.8% of the study population suffers from depression, a substantially higher prevalence compared to the 18.7% prevalence of mental disorders among adults reported in the 2019 NMHS of Bangladesh [25]. The National Mental Health Survey (NMHS) data reflects the overall adult population; whereas our study sample may have specific characteristics or risk factors that increase the likelihood of depression. Moreover, variations in the tools and diagnostic criteria used to measure depression may contribute to the difference. The NMHS reported overall mental disorders, while this study focused specifically on depression using the PHQ-9, which is highly sensitive to depressive symptoms. According to the World Health Organization (WHO), depression is more prevalent in women than in men [25]. Similarly, our findings align with those of the previous study conducted by the WHO. As we check the severity of depression, we find that 19.8% had minimal depression, 22.4% had mild depression, 20.4% had moderate depression, 20.0% had moderately severe depression, and 17.3% had severe depression.

One of the previous studies on the issue of time spent on social media shows a positive association between time spent on social media and depression, with a higher prevalence of depression among individuals who spend a significant amount of time on social media [34]. This study strongly supports this finding, as the results also validate the patterns observed in the previous research. The consistency of these outcomes further reinforces the link between increased social media usage and a higher prevalence

Table 4 Association between depression and selected factors, (n=450)

Characteristics	Depression status		*P*
	Absent, n (%)	Present, n (%)	
Age (in years)			
≤20	81 (44.8)	100 (55.2)	<0.01
21-24	79 (36.1)	140 (63.9)	
≥25	30 (60.0)	20 (40.0)	
Gender			
Male	126 (44.8)	155 (55.2)	0.15
Female	64 (37.9)	105 (62.1)	
Uses Facebook			
Yes	170 (40.5)	250 (59.5)	<0.01
No	20 (66.7)	10 (33.3)	
Uses YouTube			
Yes	148 (40.7)	216 (59.3)	0.17
No	42 (48.8)	44 (51.2)	
Uses X			
Yes	16 (28.1)	41 (71.9)	0.02
No	174 (44.3)	219 (55.7)	
Uses Instagram			
Yes	60 (37.3)	101 (62.7)	0.11
No	130 (45.0)	159 (55.0)	
Uses Pinterest			
Yes	13 (26.0)	37 (74.0)	0.01
No	177 (44.2)	223 (55.8)	
WhatsApp			
Yes	67 (51.1)	64 (48.9)	0.01
No	123 (38.6)	196 (61.4)	
Time spent on social media (in hours)			
1–5	119 (45.1)	145 (54.9)	0.01
6–10	55 (34.6)	104 (65.4)	
≥11	16 (59.3)	11 (40.7)	
Follows family/friend			
Yes	133 (40.9)	192 (59.1)	0.37
No	57 (45.6)	68 (54.4)	
Follows news/ Entertainment			
Yes	132 (40.7)	192 (59.3)	0.31
No	58 (46.0)	68 (54.0)	
Follows celebrity/model			
Yes	41 (29.7)	97 (70.3)	<0.01
No	149 (47.8)	163 (52.2)	
Follows gaming accounts			
Yes	19 (23.8)	61 (76.2)	<0.01
No	171 (46.2)	199 (53.8)	
Follows funny accounts			
Yes	44 (30.8)	99 (69.2)	<0.01
No	146 (47.6)	161 (52.4)	
Follows animals/birds			
Yes	34 (29.8)	80 (70.2)	<0.01
No	156 (46.4)	180 (53.6)	
Follows others			
Yes	32 (33.3)	64 (66.7)	0.47
No	158 (44.6)	196 (55.4)	
Total	190 (42.2)	260 (57.8)	

of depression. This study also examined the association between different social media platforms and depression, identified that Facebook, X (formerly Twitter), and Pinterest are positively linked to depression, which is in line with previous researches [2, 24]. For example, a study [2] analysed multiple platforms among young adults and found that increased usage was significantly associated with higher levels of depression. When considering the types of accounts followed by respondents, those following accounts related to celebrities, games, humorous content, animals, and other entertainment sources showed higher levels of depression. This aligns with previous studies, which suggest that visual social media platforms like Instagram and Pinterest, as well as following accounts related to lifestyle, celebrities, and funny content, can heighten feelings of inadequacy and social comparison, thereby increasing depression levels [10, 35]. Although demographic variables such as gender, age, and social media-related factors are significantly associated with depression.

To make the discussion more actionable, several recommendations are proposed: First, digital literacy programs should be introduced to educate youth on responsible social media use, focusing on privacy, critical thinking, and avoiding misinformation. Second, mental health awareness campaigns targeting youth are essential to raise awareness about the mental health impacts of social media, reduce stigma, and encourage open discussions. Lastly, interventions for high-risk users, such as excessive social media consumers, should be implemented, offering tailored support like counseling, digital detox programs, and self-regulation tools. These measures aim to promote responsible social media usage and support mental well-being.

Limitations

The current investigation used a purposive sampling technique. While conducting the study, the time was insufficient, and no funds were provided. Many respondents did not give their exact age and showed an inappropriate age on which this study had to depend. As a result, the respondent's age may be subjected to error. In many cases, respondents did not want to give information, which needed some time to get desirable information. The socio-demographic factors (e.g., income, area of residence, education, mother's education, father's education, mother's occupation, father's occupation, religion, marital

Table 5 Binary logistic regression analysis of variables associated with depression

Explanatory Variables	Adjusted odds ratio (95% CI[a])
Respondent's age (in years)	
≤20	Ref
21–24	1.2 (0.8–1.8)
≥25	0.7 (0.3–1.3)
Uses Facebook	
No	Ref
Yes	2.1 (0.9–5.0)
Uses X (Twitter)	
No	Ref
Yes	1.5 (0.8–3.0)
Uses Pinterest	
No	Ref
Yes	1.3 (0.6–2.6)
WhatsApp	
No	Ref
Yes	0.5 (0.3–0.7)
Time spent on social media (in hours)	
1–5	Ref
6–10	1.4 (0.9–2.1)
≥11	0.5 (0.2–1.3)
Follows celebrity/ model	
No	Ref
Yes	1.5 (0.9–2.5)
Follows gaming accounts	
No	Ref
Yes	1.9 (1.0–3.6)
Follows funny accounts	
No	Ref
Yes	1.4 (0.8–2.3)
Follows animals/ birds	
No	Ref
Yes	1.3 (0.8–2.2)

[a]CI indicates Confidence interval

status, *etc.*) were not taken into account, which can influence the results of the present study.

Conclusion

This study was aimed to examine how social media-related factors are associated with depression and identified its adverse impacts on mental health. Age and the amount of time spent on social media are found positively associated with depression and females being more affected compared to males. The study showed that a person's depression status can vary based on the social media platforms they use, the types of accounts they follow, and the content they consume. People who use Facebook, X, Pinterest, and WhatsApp platforms are more likely to experience depression. Based on the study's findings, increasing awareness about the negative impacts of excessive social media use, especially among youth, is recommended through educational programs. Providing mental health resources and parental guidance is essential. Social media platforms should implement mental well-being features, and further research into social media's impact on mental health should be supported. Future longitudinal research is vital to confirm findings and identify trends. Evidence-based policies, such as digital literacy programme and mental health campaigns, are recommended to help policymakers and professionals develop targeted interventions for mental well-being.

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Author contributions

Conception or design of the work; or the acquisition, analysis, or interpretation of data for the work: MNIM, MRH, MH. *Drafting the work or reviewing it critically for important intellectual content:* MRH, MNIM. *Final approval of the version to be published: MMI, MHKS, SP, MNP. Accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved:* MNM.

Conflict of interest

We do not have any conflict of interest.

Data availability statement

We confirm that the data supporting the findings of the study will be shared upon reasonable request.

Supplementary file

None

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