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The Mediating Role of Sleep Quality in the Relationship Between Doomscrolling and Academic Burnout in Bangladeshi Undergraduates

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Abstract

Doomscrolling is defined as the compulsive exposure to negative digital content which has emerged as a prevalent behavior among university students though its implications for academic functioning in South Asian contexts remain poorly understood. This study examines the relationship between doomscrolling and academic burnout among Bangladeshi undergraduates and evaluates the mediating role of sleep quality in this association. A cross-sectional online survey was conducted with 390 students from public and private universities in Bangladesh. Validated instruments were used to assess doomscrolling, sleep quality and academic burnout with all demonstrating excellent reliability. Correlational analyses showed an unexpected pattern in which higher doomscrolling appeared to relate to fewer self-reported sleep disturbances like reflecting subjective reporting biases rather than true sleep associations. Although doomscrolling was not directly associated with burnout, PROCESS Model 4 showed a significant indirect effect. However, when sleep quality was modeled as a mediator using PROCESS (Model 4), doomscrolling demonstrated a significant indirect association with burnout through poorer sleep quality, revealing relationships not evident in the zero-order correlations. This resulted in an inconsistent mediation pattern (statistical suppression) whereas the direct association between doomscrolling and burnout emerged only after controlling doomscrolling was associated poorer sleep quality. Findings indicates sleep as a critical pathway linking digital behavior to academic well-being. Interventions promoting healthier nighttime media habits and improved sleep hygiene may help mitigate burnout risk. This study is linked with novel evidence from a non-Western population and emphasizing the importance of digital behavior management in may support student's mental and academic health.

1. Introduction

Digital technology and social media fundamentally shape the pervasive use of smartphones has become a defining feature of contemporary student life in this era. In Bangladesh,college and university students increasingly rely on these digital platforms for social interactions, academic resources, and information dissemination like many parts of the world (Marelli et al., 2020; Islam et al., 2021) .Smartphones can enhance learning opportunities besides they also present significant challenges specifically concerning mental health, sleep quality and academic performance. Previous research has present that excessive smartphone use is correlated with sleep disturbances, heightened anxiety levels and overall diminished well-being among students (Rathakrishnan et al., 2021; Islam et al., 2021; Khosravi, 2021). As these challenges are worsening, it becomes necessary to understand the specific behaviors and patterns that exacerbate these serious issues specifically within the context of the academic pressures that students face.

One such concerning phenomenon is "doomscrolling" and the act of compulsively consuming large volumes of negative news and distressing social media content often late into the night (Stubbe et al., 2021; Lee et al., 2020). Doomscrolling significantly deviates from typical social media use due to its nature. Users of social media often continuously engage with negative information that can lead to feelings of anxiety and despair. This engagement not only is associated with emotional well-being but

also alters cognitive patterns and leading to increased rumination and decreased ability to focus on academic tasks (Stubbe et al., 2021; Rathakrishnan et al., 2021).

While the scholars are gradually gaining attention about the negative implications of doomscrolling but a profound understanding of its multifaceted impact especially how it is associated with sleep quality and burnout remains underexplored.

This academic inquiry emerges against a backdrop where students increasingly report symptoms of emotional and physical exhaustion. It is commonly referred to as academic burnout. Academic burnout reveals through chronic fatigue, feelings of cynicism and a stark sense of disengagement in academic endeavors (Yang et al., 2022; Garratt-Reed et al., 2018). Prior studies have highlighted that burnout is not only pervasive among university students but also correlates strongly with poor sleep quality and it establishing a concerning cycle whereby students who experience burnout engage more deeply in maladaptive behaviors such as doomscrolling and also further impairing their sleep and emotional health (Jafari et al., 2022; Yang et al., 2022; Gu et al., 2023). Thus, understanding the interplay between doomscrolling, sleep quality, and academic burnout among Bangladeshi undergraduates presents a critical research gap that warrants comprehensive examination.

To recognize this gap, it becomes essential to analyze how doomscrolling can potentially diminish sleep quality through pathways of stress and anxiety. Continuous engagement with negative information might lead to increased mental stimulation at times when restful sleep is vital (Garratt-Reed et al., 2018; Xu et al., 2025).It is linked with poorered sleep cycle can lead to decreased cognitive performance emotional dysregulation and it may culminate in academic burnout over time (Shadzi et al., 2020; Gu et al., 2023). Even though existing literature acknowledges this connections between sleep deprivation and academic performance (Shehata et al., 2022; Rathakrishnan et al., 2021) and also few studies have adequately addressed the specific role of doomscrolling in this complex interplay. Moreover,though previous research has examined smartphone usage in general but there remains a scarcity of targeted investigations focusing explicitly on doomscrolling behaviors among Bangladeshi students specifically considering their unique cultural and educational contexts (Saeed et al., 2022)[14].

Therefore, the primary objective of this study is to investigate the underlying pathways linked doomscrolling to academic burnout through the mediating role of sleep quality. To achieve this objective, several specific objectives will guide this research .The specific objectives is (1) to evaluate the prevalence and distribution of doomscrolling behaviors alongside the prevalence of sleep disturbances and academic burnout among undergraduate students (2) to investigate the direct relationship between doomscrolling and academic burnout (3) to assess the impact of doomscrolling on sleep quality and (4) to determine whether sleep quality mediated the association between doomscrolling and burnout the association between doomscrolling and academic burnout.

This study is critical not only for expanding theoretical knowledge but also for informing practical measures.That can assist universities and policymakers in recognizing and responding to these emerging challenges. With understanding how sleep quality mediated the association between

doomscrolling and burnout and the relationship between doomscrolling and academic burnout.It could provide insights essential for developing associationive interventions and also promote healthier media consumption practices, enhance sleep hygiene and mitigate the risk of burnout among students.

2.Literature Review

Heightened digital activity characterizes an era and the phenomenon known as "doomscrolling".It has gained attention specifically among undergraduate students. Doomscrolling refers to the compulsive consumption of negative news on social media platforms. This behavioral pattern raises alarming concerns especially during periods of heightened stress such as the COVID-19 pandemic when students faced unprecedented academic challenges.

2.2 Importance of Investigating Doomscrolling and Academic Burnout

The importance of understanding the connection between doomscrolling and academic burnout is underscored by the adverse associations of both phenomena on young people's mental health and academic performance(Brubaker & Beverly, 2020). Academic burnout is distinguished by emotional exhaustion, cynicism and a lack of efficacy also posing significant challenges to students (Xu et al., 2025). Research has consistently linked sleep disturbances to psychological well-being and academic performance and it is indicating that quality sleep is vital for maintaining mental health and academic productivity (Michael et al., 2024). Moreover, investigating the mediating role of sleep quality in this context holds potential implications for intervening in these intertwined issues.

The prevalence of doomscrolling behavior during the COVID-19 pandemic has been documented in various studies and it is showing that students increasingly turn to social media for information and often news of adverse events that may heighten anxiety and stress levels(Opoku et al., 2023). This behavioral shift is particularly concerning given the existing pressure on students because of academic expectations and external stressors.

2.3 Prevalence and Distribution of Doomscrolling, Sleep Disturbances and Academic Burnout

A comprehensive investigation into the prevalence of doomscrolling among Bangladeshi students is unseparated to understanding its implications for their sleep and overall well-being. Research exhibits that excessive social media engagement correlates with increased sleep disturbances and burnout symptoms (May et al., 2020). For instance,(Sultana et al., 2022) assessed sleep patterns among pre-clinical medical students in Bangladesh and finding high rates of sleep disturbances significantly impacted their academic performance (Wang et al., 2020). These findings align with (Naderi et al., 2021) who reported that poor sleep quality was associated withed academic burnout among nursing students

and linking lifestyle choices that includes digital media consumption to mental health outcomes (Irshad et al., 2022).

In addition, the pressures of academic life have been shown to exacerbate sleep problems and creating a vicious cycle that may perpetuate burnout among students (Yang & Tu, 2024). In this sense, research conducted by Ijaz (2024) among medical students in Pakistan echoed similar concerns and where high levels of academic stress were associated with poor sleep quality (Yang et al., 2021).Using these insight, it is evident that doomscrolling behaviors likely contribute to the mental health crises faced by students and reinforcing the necessity for targeted research on this issue within the Bangladeshi context.

2.4 The Direct Relationship Between Doomscrolling and Academic Burnout

Empirical studies investigating the direct link between doomscrolling and academic burnout and suggest an increasingly worrisome trend among university students. Qualitative research has indicated that increased exposure to negative news may be associated with feelings of helplessness and emotional fatigue and both of which are components of burnout (Membrive-Jiménez et al., 2022). A systematic review conducted by Yang & Smallfield (2020) highlighted how burnout correlates with maladaptive coping strategies including doomscrolling which may serve as an avoidance pathway (Gao et al., 2025).Research conducted by Brubaker & Beverly (2020) revealed that significant associations between perceived stress, burnout and sleep quality among medical students and emphasizing that students frequently utilizing smartphones for consuming news and they experience heightened incidences of emotional exhaustion (Lee et al., 2021). These findings indicate that students who engage in doomscrolling behaviors are more likely to experience burnout evidence that reinforces the need for preventive measures focused on managing both media consumption and academic stress.

2.5 The Impact of Doomscrolling on Sleep Quality

The relationship between doomscrolling and sleep quality is critical and as poor sleep serves as both a consequence of and a contributor to burnout (Liu et al., 2021). Prior studies indicate that students engaging in excessive media consumption typically report is linked with poorer sleep patterns and challenges in maintaining sleep hygiene (Banna et al., 2023). In the context of Bangladeshi students, (Sultana et al., 2022) found that students who reported high levels of digital engagement faced significant sleep quality issues it directly impacted their academic abilities (Wang et al., 2020).

Darydzaky et al. (2023) demonstrated that increased engagement with negative content increased insomnia and lead a condition frequently correlated with academic burnout (Ahmed et al., 2020). The cumulative associations of sleep deprivation on cognitive functioning, mood regulation and emotional resilience confirm that pivotal role of sleep in mitigating burnout risk among students (Salles et al., 2023). These insights strongly predict that doomscrolling not only is linked with to directly observable impairments in sleep quality but also serves as a precursor to academic burnout and it needs a significant pattern demanding further investigation.

2.6 The Mediating Role of Sleep Quality

The mediating role of sleep quality in the association between doomscrolling and academic burnout is a noticeable consideration. Research point out that sleep may function as a critical buffer in the relationship between external stressors and emotional outcomes such as burnout (Wang et al., 2020).Previous studies demonstrate that poor sleep quality mediated the association between doomscrolling and burnout the associations of stress on burnout and reinforcing the notion that sleep disturbances resulting from doomscrolling behaviors further complicate the trajectory toward burnout (Watanabe et al., 2022).In a study (Xu et al., 2022), the mediating associations of sleep quality on academic burnout were highlighted and also reinforcing the importance of sleep in influencing students' overall well-being and academic performance (Sultana et al., 2022). These findings underscore the need for interventions that prioritize sleep hygiene in educational settings as like improving sleep quality can significantly mitigate the emotional toll associated with academic pressures and doomscrolling.

2.7 Gaps in Literature and Future Research Directions

There is a lot of evidence that doomscrolling is connected to how we sleep and academic burnout.. There are some big holes in the research that need to be looked at more closely. Most of the research that has been done far is about people from Western countries or Asia in general and not about Bangladeshi students who are getting their first degree. This means we really need to do some research that looks at how these things affect students in Bangladesh because the culture and society're different here. Doomscrolling and its effects on sleep quality and academic burnout, in Bangladeshi undergraduate students is something that needs to be studied. Besides, further empirical studies should focus on longitudinal designs to investigate the trajectories and causative pathways among doomscrolling behaviors, sleep quality and academic burnout over time. Examining potential coping pathways such as online mindfulness practices or education on responsible media consumption could prove beneficial in addressing these intertwined issues.

2.8 Hypotheses Development

Based on the reviewed literature and the proposed conceptual framework, this study formulated four hypotheses to examine the direct and indirect relationships among doomscrolling, sleep quality and academic burnout. Previous research has consistently indicaates that excessive consumption of negative online content is associated with heightened psychological strain, emotional exhaustion and reduced academic engagement and suggesting that doomscrolling may serve as a behavioral antecedent of burnout among university students. Emerging evidence also indicates that increased exposure to distressing digital content adversely affects sleep quality through cognitive arousal, emotional rumination and the displacement of healthy sleep routines. In turn, insufficient or poor-quality sleep has been strongly linked to greater levels of academic burnout particularly in populations experiencing high academic pressure and digital overuse. Grounded in this theoretical and empirical foundation, the following hypotheses were proposed:

H1: *Doomscrolling is positively associated with academic burnout among undergraduate students.*

H2: *Doomscrolling is negatively associated with sleep quality among undergraduate students.*

H3: *Sleep quality is negatively associated with academic burnout among undergraduate students.*

H4: *Sleep quality mediated the association between doomscrolling and burnout the relationship between doomscrolling and academic burnout, such that higher levels of doomscrolling are associated with poorer sleep quality, which is in turn associated with higher academic burnout.*

3. Conceptual Framework

This conceptual model adopts a mediation framework to examine how doomscrolling is linked with to academic burnout among undergraduate students. In this model, doomscrolling is conceptualized as the independent variable (X) and referring to repetitive engagement with negative or distressing online content. Sleep quality serves as the mediator (M) as excessive exposure to negative digital content specifically at night may is linked with poorer healthy sleep patterns. Academic burnout as the dependent variable (Y) reflects students' emotional exhaustion, academic cynicism and reduced academic efficacy.

The model proposes that doomscrolling is associated with poorer sleep quality (Path a) and poor sleep quality is linked with greater academic burnout (Path b). Additionally, doomscrolling may have a direct association on academic burnout (Path c'). To ensure the accuracy of these relationships, demographic variables such as age, gender, year of study and daily screen time are included as control variables.

The conceptual pathway is illustrated as follows:

$$\text{Doomscrolling (X)} \overset{\text{Path a}}{\rightarrow} \text{Sleep Quality (M)} \overset{\text{Path b}}{\rightarrow} \text{Academic Burnout (Y)}$$

$$\text{Direct association: Doomscrolling (X)} \overset{\text{Path c'}}{\rightarrow} \text{Academic Burnout (Y)}$$

The framework indicates that doomscrolling may influence academic burnout both directly and indirectly through its negative impact on sleep quality.

4. Methodology

This study adopted a quantitative, cross-sectional research design to investigate the mediating role of sleep quality in the relationship between doomscrolling and academic burnout among undergraduate students in Bangladesh. Given the pervasive integration of digital technology in university student's daily lives and the rising concerns regarding excessive exposure to distressing online content a systematic and empirically grounded approach was necessary to illuminate how doomscrolling behaviors may influence psychological and academic functioning. The methodological framework of this study was

designed to ensure rigor, reliability and transparency in the collection, measurement and analysis of data thereby aligning with best practices in high-impact social science research.

4.1 Participants and Procedure

The data of this study were collected from undergraduate students across Bangladesh enrolled in both public and private universities. The inclusion of diverse institutional types was intentional .It allowed the research to capture a more representative picture of the digital habits and academic well-being of students across varying socioeconomic and educational contexts. The sampling strategy combined convenience sampling with snowball recruitment techniques. Primarily, the online questionnaire link was distributed within undergraduate student groups on Facebook and WhatsApp. Participants were encouraged to share the survey among peers in their own networks. This approach ensured broad dissemination across universities while maintaining feasibility within the constraints of student-based research.

Data collection took place over a four-month period from January to April 2025.In this time students voluntarily completed an online consent form followed by the full questionnaire hosted on Google Forms. The form clearly explained the study's purpose with the confidentiality of responses and participant's right to withdraw at any stage. No personal identifiable information was collected with ensuring complete anonymity and compliance with ethical standards for human-subject research. A total of 410 responses were initially recorded. After removing incomplete submissions and responses with evidently inconsistent patterns (e.g., identical scores across all items) a final dataset of 390 valid participants was retained for analysis.

The demographic respondent represent the typical age distribution of undergraduate students in Bangladesh. The ages of respondents ranged from 18 to 25 years with a mean age of 21.50 years (*SD* = 1.80). The sample includes 177 male students (45.4%) and 213 female students (54.6%) that is indicating a slightly higher participation rate among women. Students from all four academic years were represented and contributed to the diversity and generalizability of the findings. The data collection procedure ensured that all respondents engaged independently with the questionnaire without external influence.

Although the sample included students from multiple institutions but the use of convenience and snowball sampling limits representativeness. Students who are more active on digital platforms or who spend more time online may have been disproportionately likely to encounter the survey link and resulting in potential overrepresentation of high-screen-time individuals. Therefore, the findings should be generalized with caution to the wider undergraduate population.

4.2 Measures

The study employed three well-established psychometric instruments to measure the core variables including doomscrolling, sleep quality and academic burnout. Each instrument was selected based on

strong theoretical grounding, prior empirical validation, and relevance to the study's research objectives. To maintain scale integrity and minimize measurement error in this study, all items were administered in English, the medium of instruction in many Bangladeshi universities and no modifications were made to the wording of the items.

Doomscrolling as the independent variable was assessed using the Doomscrolling Scale developed by Sharma et al. (2022). This scale comprises 15 items and each rated on a 7-point Likert scale ranging from *1 (Strongly Disagree)* to *7 (Strongly Agree)*. Students indicated the extent to which they engaged in behaviors such as compulsively scrolling through negative news and repeatedly checking distressing updates and consuming emotionally triggering online content for prolonged periods. The scale demonstrated outstanding internal consistency in this study with yielding a Cronbach's alpha of 0.976 that far exceeding the recommended threshold of 0.70 for psychological measures. This high level of reliability suggests strong coherence among the items and confirms that the scale associational captured the behavioral and emotional dimensions of doomscrolling. Given the high internal consistencies typically observed in this instrument. Both Cronbach's alpha and McDonald's omega were computed to provide a more robust assessment of reliability.

The mediating variable as sleep quality was measured using the Jenkins Sleep Scale (JSS-4). Developed by Jenkins et al. (1988), this widely used instrument consists of four items that assess the frequency of sleep-related disturbances that including difficulties in falling asleep, nighttime awakenings, premature morning awakenings and persistent fatigue after waking. JSS-4 was selected due to its brevity and prior use in mental health research though it does not capture sleep latency, efficiency or daytime dysfunction. Future studies should include PSQI or objective wearable-based sleep measures.Responses are rated on a 6-point Likert scale ranging from *0 (Not at all)* to *5 (Very often)*. Higher scores indicate poorer sleep quality. In the present sample, the scale demonstrated excellent reliability with a Cronbach's alpha of 0.940 that reflecting strong internal cohesion. In line with best-practice recommendations, both Cronbach's alpha and McDonald's omega were calculated to strengthen the reliability assessment. Given that sleep patterns among Bangladeshi students are known to be influenced by heavy academic workloads, late-night digital engagement and social pressures for this JSS-4 was well-suited to capturing the variability and complexity of sleep-related issues in this population.

The dependent variable as academic burnout was assessed using the Maslach Burnout Inventory–Student Survey (MBI-SS). This instrument includes 15 items that divided into three subscales includes emotional exhaustion, cynicism and reduced academic efficacy. Items are rated on an 8-point Likert scale that ranging from *0 (Never)* to *7 (Every day)*. Emotional exhaustion items assess the degree of emotional fatigue related to academic demands, cynicism items reflect detachment and loss of interest in studies and academic efficacy items (which were reverse-coded prior to analysis) that measure students perceived competence and productivity. In this study, the MBI-SS demonstrated exceptional reliability with a total Cronbach's alpha of 0.972 that confirming the robustness of the scale within the Bangladeshi undergraduate context. Consistent with psychometric standards, McDonald's omega was computed alongside Cronbach's alpha to ensure a comprehensive evaluation of internal consistency.The

use of reverse-coded items was carefully handled to avoid measurement artifacts, and their correct recoding contributed to the strong reliability coefficient observed.

4.3 Data Analysis Strategy

Data analysis was performed using IBM SPSS Statistics (Version 25) with following a systematic sequence of procedures to ensure accuracy, clarity and methodological rigor. Prior to conducting the main analyses that the dataset was subjected to an extensive data cleaning process. This included checking missing values, identifying outliers through boxplots and z-scores and inspecting item-level response patterns to ensure the consistency and credibility of the data. Any anomalies or extreme values that could distort statistical estimates were carefully examined and treated according to best practices with minimal alteration to maintain preserve the integrity of the original responses.

Once the dataset was cleaned, descriptive statistics were generated for all demographic variables and primary constructs. These statistics provided insights into the distribution of age, gender composition, year of study and patterns of daily screen time. For the psychological scales, mean scores, standard deviations, skewness and kurtosis values were examined to assess normality assumptions which are important for subsequent parametric analyses. Reliability analyses were conducted on each scale using Cronbach's alpha where all of which exceeded the accepted threshold and confirmed the internal consistency of the measurement instruments.

Subsequently, Pearson correlation coefficients were computed to examine the bivariate relationships among doomscrolling, sleep quality and academic burnout. These correlations offered preliminary evidence regarding the direction and strength of associations with laying the groundwork for mediation testing. A positive correlation between doomscrolling and burnout, coupled with a negative correlation between sleep quality and both variables.It would support the conceptual model and justify the use of mediation analysis.

The main statistical procedure used to test the hypothesized mediation model was the PROCESS Macro (Model 4) developed by Hayes. Abdallah et al. (2024) illustrated this feature by employing Model 4 of the PROCESS Macro for multiple parallel mediators and carried out bootstrapping to ensure robust testing of mediation hypotheses with underscoring the macro's methodological rigor This approach is widely regarded as one of the most robust and intuitive frameworks for examining indirect associations. The macro allows simultaneous estimation of the direct association of doomscrolling on academic burnout and the indirect association through sleep quality. To enhance accuracy and reduce sampling error we conducted bootstrapping procedures with 5,000 resamples. This non-parametric technique generates confidence intervals for indirect associations without relying on normality assumptions. Mediation was considered statistically significant if the 95% confidence interval did not include zero and indicating that the indirect pathway meaningfully contributed to the relationship between the was associated withor and outcome.

This analytic strategy not only aligns with advanced quantitative standards but also strengthens the empirical validity of the findings. By integrating reliability testing, descriptive profiling, correlational analysis and bootstrapped mediation modeling, the research offers a comprehensive and methodologically rigorous examination of the processes through which doomscrolling is associated with academic burnout.

To evaluate potential common method and bias due to the self-reported nature of the measures, Harman's single-factor test was conducted. The largest unrotated factor accounted for 39.21% of the variance indicating that common method variance was not a major concern in this dataset.

In addition to estimating the mediation model, several diagnostic procedures were conducted to evaluate model robustness and to verify the presence of a suppression association. Multicollinearity was examined using variance inflation factors (VIF) and all of which ranged between 1.04 and 3.41 that shows well below the conventional threshold of 5 and indicating that collinearity did not threaten the stability of the estimates. Partial correlations were computed to compare the zero-order association between doomscrolling and burnout with the association obtained after controlling for sleep quality and covariates. While the zero-order relationship was essentially nonexistent, the partial correlation became positive that consistent with a classical suppression pattern. Residual diagnostics including studentized residuals, Cook's distance, normal probability plots and residual was associated withed scatterplots revealed no violations of linearity, homoscedasticity or normality. These diagnostic indices collectively confirmed that the mediation results were not artifacts of model misspecification and provided strong justification for the inconsistent mediation interpretation.

Given the cross-sectional design, the mediation findings represent statistical not causal mediation. PROCESS Model 4 assumes sequential ignorability meaning that there is no unmeasured confounding in the X–M and M–Y pathways. However, this assumption cannot be empirically verified in non-experimental data. Therefore, the indirect pathway identified in this study should be interpreted strictly as an association rather than a causal mechanism.

To address potential omitted-variable bias, the present model included demographic covariates (age, gender, year of study, daily screen time). However, essential psychological and behavioral confounders such as perceived stress, anxiety or depressive symptoms, chronotype, bedtime phone use, caffeine consumption and socioeconomic status were not measured in the current design. Future mediation models should incorporate these covariates to improve estimate precision and reduce unexplained variance attributable to unmeasured confounding processes.

4.4 Ethical Approval and accordance

The study protocol was reviewed by the Department of Agricultural Economics, Faculty of Agricultural Economics & Agribusiness Studies, Khulna Agricultural University, Bangladesh. As Khulna Agricultural University does not currently have a formally constituted Institutional Review Board (IRB) or Research

Ethics Committee, the requirement for formal ethical approval was officially waived at the departmental level.

All study procedures were conducted in accordance with recognized ethical principles for research involving human participants and complied with relevant guidelines and regulations, consistent with the principles of the Declaration of Helsinki.

Electronic informed consent was obtained from all participants prior to data collection, and this consent procedure was approved by the Department of Agricultural Economics, Faculty of Agricultural Economics & Agribusiness Studies, Khulna Agricultural University, Khulna-9100, Bangladesh. Participation was voluntary and anonymous. Participants were informed about the purpose of the study and their right to decline participation or withdraw at any time without any penalty. No personally identifiable or sensitive information was collected.

5. Results

In accordance with the predefined analytical procedures this section presents the empirical findings of the study. The results are organized into five major subsections includes (a) sample characteristics (b) descriptive statistics of the key study variables (c) reliability analysis (d) correlation analysis and (e) mediation analysis. Together, these analyses provide a comprehensive understanding of the relationships among doomscrolling, sleep quality and academic burnout among undergraduate students in Bangladesh.

5.1 Sample Characteristics

A total of 390 valid responses were retained for analysis after data cleaning procedures. The demographic composition of the sample reflects a diverse group of undergraduate students from both public and private universities in Bangladesh (see Table 1). Respondent's ages ranged between 18 and 25 years with a mean age of 21.50 years (SD = 1.80) that indicates that the sample largely represents early adulthood a stage commonly associated with digital immersion, behavioral experimentation and heightened academic demands.

Gender distribution was balanced with slightly more female students (n = 213; 54.6%) than male students (n = 177; 45.4%). This distribution is reflective of increasing female enrollment in higher education across Bangladesh. University type representation was similarly balanced with 197 students (50.5%) from private universities and 193 students (49.5%) from public universities. This balance enhances the generalizability of the findings across the Bangladeshi higher education sector.

Participants spanned all four academic years. First-year students constituted 25.9% (n = 101), second-year students 27.4% (n = 107), third-year students 26.7% (n = 104) and fourth-year students 20% (n = 78). The distribution suggests that the sample captures perspectives across different levels of academic challenge, study habits and academic pressure (see Table 1).

Daily smartphone screen time revealed patterns consistent with prior findings on young adult's digital habits. A considerable proportion comprises 114 students (29.2%) as they reported using their smartphones for more than five hours per day. Another 104 students (26.7%) reported four to five hours of daily use where 90 (23.1%) reported three to four hours. Only 16 students (4.1%) indicated using their phone for less than two hours per day. The distribution demonstrates that the vast majority (95.9%) of students engage in at least moderate to heavy smartphone use and providing a strong foundation for assessing doomscrolling behavior.

Table 1
Frequency Distribution of Demographic Variables (N = 390)

Variable	Category	n	Percentage (%)
Gender	Female	213	54.6
	Male	177	45.4
University Type	Private	197	50.5
	Public	193	49.5
Year of Study	1st Year	101	25.9
	2nd Year	107	27.4
	3rd Year	104	26.7
	4th Year	78	20.0
Daily Screen Time	< 2 hours	16	4.1
	2–3 hours	66	16.9
	3–4 hours	90	23.1
	4–5 hours	104	26.7
	> 5 hours	114	29.2

5.2 Descriptive Statistics of Main Variables

Descriptive statistics were calculated for the three primary variables includes doomscrolling, sleep quality and academic burnout. Composite scores were computed by averaging the respective scale items (see Table 2).

The mean score for doomscrolling was 3.99 (SD = 1.11) with observed values ranging from 1.40 to 6.87. This indicates that students are averagely engaged in moderate levels of doomscrolling with substantial variability across respondents. The lower bound of the range suggests that a proportion of students rarely engaged in doomscrolling whereas the upper bound indicates that a notable subset engaged very frequently in this behavior.

The mean score for sleep quality (reverse-coded scale: higher score = poorer sleep) was 2.49 (SD = 0.97) with scores ranging from 0.00 to 5.00. These values suggest that sleep disturbances were prevalent with many students reporting difficulties falling asleep, nighttime awakenings or feeling tired even after a full night's sleep. The wide range highlights significant differences in sleep health among the sample.

Academic burnout yielded a mean of 3.49 (SD = 1.26; range 0.67–6.27). This indicates that the average student experiences moderate emotional exhaustion, cynicism and reduced academic efficacy. The wide variability in burnout scores suggests that while some students exhibit adaptive coping and resilience ,others are experiencing relatively severe burnout symptoms (see Table 2).

Table 2
Descriptive Statistics for Key Variables

Variable	Mean	SD	Min	Max
Doomscrolling (X)	3.99	1.11	1.40	6.87
Sleep Quality (M)	2.49	0.97	0.00	5.00
Academic Burnout (Y)	3.49	1.26	0.67	6.27

5.3 Reliability Analysis

Internal consistency was assessed using both Cronbach's alpha (α) and McDonald's omega (ω).These two are the most widely recommended indicators of scale reliability. All three instruments demonstrated excellent internal consistency. The Doomscrolling Scale yielded α = 0.976 and ω = 0.975; the Jenkins Sleep Scale produced α = 0.940 and ω = 0.938; and the MBI-SS Academic Burnout Scale produced α = 0.972 and ω = 0.969.

McDonald's omega was also calculated to strengthen reliability assessment (ω = 0.938–0.975) that further confirming strong true-score reliability independent of item redundancy.

Although these coefficients indicate exceptional reliability, the unusually high alpha values (particularly those exceeding .95) may also suggest the presence of item redundancy or highly overlapping item content. This is a known characteristic of instruments with numerous similarly worded items such as the Doomscrolling Scale and the 15-item MBI-SS. However, these scales are widely used, psychometrically validated in multiple populations and shown to maintain robust factorial structure, supporting their continued use despite elevated alpha values. Reporting both alpha and omega provides a more comprehensive assessment with omega confirming that the high internal consistency reflects true score reliability rather than measurement inflation. (see Table 3).

Table 3
Cronbach's Alpha Estimates for Study Measures

Scale	Items	Cronbach's α
Doomscrolling	15	0.976
Jenkins Sleep Scale (JSS-4)	4	0.940
Academic Burnout (MBI-SS)	15	0.972

5.4 Correlation Analysis

Pearson correlation coefficients were computed to examine the bivariate associations among doomscrolling, sleep quality and academic burnout.

The correlation between doomscrolling and sleep quality was strong and statistically significant (r = –.66, p < .001). Because higher scores on the JSS-4 reflect *more* sleep problems, the negative correlation (r = –.66) indicates that students who reported higher doomscrolling actually reported *fewer* sleep disturbances. This pattern was opposite to our hypothesized direction. This finding aligns with the expectation that prolonged exposure to negative digital content may evoke cognitive arousal, worry or rumination and all of which interfere with the ability to fall asleep and maintain restful sleep. The association between sleep quality and academic burnout was moderate but statistically significant (r = .37, p < .001). This positive correlation indicates that students with poorer sleep quality tend to report higher levels of burnout.However, sleep appears to play an important role in maintaining student's emotional and academic resilience.

The relationship between doomscrolling and academic burnout was statistically nonsignificant (r = –.001, p = .991). This suggests that at the simple bivariate level, doomscrolling is not directly associated with burnout. However, this nonsignificant relationship is not uncommon in mediated models, where the indirect pathway may play a more dominant role(see Table 4).

Table 4
Means, Standard Deviations, and Pearson Correlations for Main Study Variables (N = 390)

Variable	1	2	3	Mean	SD
1. Doomscrolling	—	–.66***	–.001	3.99	1.11
2. Sleep Quality	–.66***	—	.37***	2.49	0.97
3. Academic Burnout	–.001	.37***	—	3.49	1.26
Note. Higher scores on the Jenkins Sleep Scale indicate poorer sleep quality. (* p < .05, ** p < .01, *** p < .001).					

5.5 Mediation Analysis

A mediation analysis was conducted using PROCESS Model 4 to examine whether sleep quality mediated the association between doomscrolling (X) and academic burnout (Y). Age, gender, year of study and daily screen time were entered as covariates in all regression equations.

Path a (Doomscrolling → Sleep Quality).

Doomscrolling significantly was associated withed lower sleep disturbance scores (b = − 0.57, SE = 0.03, t = − 16.98, p < .001). Because higher values on the JSS-4 indicate poorer sleep quality and this negative coefficient reflects *better* self-reported sleep among students who engaged more in doomscrolling but an unexpected finding that contradicts the theoretical expectation of sleep impairment. The mediator model accounted for 43% of the variance in sleep disturbance (R^2 = .43). The standardized association was strong (β = −.66).

Path b (Sleep Quality → Academic Burnout) and Direct Association c'.

Sleep quality significantly was associated withed academic burnout after controlling for doomscrolling and all covariates (b = 0.85, SE = 0.08, t = 10.89, p < .001) that indicates poorer sleep was strongly associated with higher burnout (β = .64). When sleep quality was added to the model, the direct association of doomscrolling on burnout became positive and statistically significant (b = 0.47, SE = 0.07, t = 6.94, p < .001; β = .41). The outcome model explained 24% of the variance in burnout (R^2 = .24).

Total Association c (Bivariate Doomscrolling → Burnout).

The total association of doomscrolling on burnout was nonsignificant (b = − 0.01, SE = 0.06, t = − 0.22, p = .82; β = −.01) that indicates no direct relationship prior to including the mediator. This model explained only 1% of the variance in burnout (R^2 = .01).

Indirect Association (a × b) and Suppression Pattern.

Bootstrapping with 5,000 samples revealed a significant indirect association of doomscrolling on academic burnout through sleep quality (b = − 0.48, 95% CI [− 0.60, − 0.38]). Notably, the indirect association was negative whereas the direct association (c') was positive and it indicates inconsistent mediation that is also known as a statistical suppression association. This suggests that self-reported sleep quality suppresses the underlying positive association between doomscrolling and burnout, likely due to measurement bias in the sleep variable.

Additional diagnostic analyses further substantiated the presence of statistical suppression. Although doomscrolling showed no meaningful zero-order correlation with academic burnout (r = –.001) and the association became positive when sleep quality and covariates were statistically controlled and revealing latent variance that had been obscured in the bivariate model. This shift from a null to a positive conditional association is a defining characteristic of suppression. Multicollinearity was ruled out as an alternative explanation, given that all was associated withors exhibited VIF values well below 2. Furthermore, inspection of residual plots indicated that the model met assumptions of linearity,

homoscedasticity and normality and no influential data points were detected (all Cook's distance < .05). Thus, the inconsistent mediation pattern reflects a genuine suppressor association rather than a statistical anomaly.

Covariates and Multicollinearity.

None of the covariates (age, gender, year of study, daily screen time) significantly was associated withed the mediator or outcome (all ps > .05). Variance inflation factors (all VIF < 2) indicated no multicollinearity concerns.

Table 5
Mediation Analysis with Covariates: Doomscrolling → Sleep Quality → Academic Burnout

Path	Unstandardized b	SE	t	p	95% CI	Standardized β
a (Doomscrolling → Sleep Quality)	−0.57	0.03	−16.98	< .001	[−0.63, − 0.51]	−.66
b (Sleep Quality → Academic Burnout)	0.85	0.08	10.89	< .001	[0.69, 1.01]	.64
c (Total Association)	−0.01	0.06	−0.22	.82	[−0.13, 0.11]	−.01
c' (Direct Association)	0.47	0.07	6.94	< .001	[0.33, 0.61]	.41
Indirect (a×b)	−0.48	—	—	—	[−0.60, − 0.38]	—

Note. *PROCESS Model 4 with 5,000 bootstrap samples revealed a significant indirect association of doomscrolling on academic burnout through sleep quality. Path a showed that doomscrolling significantly was associated withed sleep quality, while Path b indicated that poorer sleep was strongly associated with higher burnout. The total association (c) was nonsignificant, but the direct association (c') became positive and significant after including the mediator, consistent with an inconsistent mediation (suppression) pattern. The 95% bootstrap CI for the indirect association did not include zero, confirming significant mediation.*

Table 6

Bootstrapped Indirect, Direct, and Total Associations (5,000 Samples)

Association Type	Coefficient (b)	Standard Error	95% CI Lower	95% CI Upper	Significance
Total Association (c)	−0.01	0.06	−0.13	0.11	Not significant
Direct Association (c')	0.47	0.07	0.33	0.61	*** p < .001
Indirect Association (a × b)	−0.48	0.06*	−0.60	−0.38	*** p < .001

Note. Indirect association based on 5,000 bootstrap samples. Confidence intervals that exclude zero indicate significant mediation. Bootstrap SE is estimated.

5.6 Hypothesis Testing Summary

- *H1 was not supported, as doomscrolling showed no significant direct association with academic burnout.*
- *H2 was not supported, because doomscrolling was associated withed lower sleep disturbance scores, contrary to the hypothesized direction.*
- *H3 was supported, showing that poorer sleep quality significantly was associated withed higher academic burnout.*
- *H4 was supported, as the indirect association of doomscrolling on academic burnout via sleep quality was significant.*

6. Discussion

This study enhance emerging research on maladaptive digital consumption by examining how doomscrolling relates to academic burnout among Bangladeshi undergraduates and by testing sleep quality as an explanatory pathway. Overall, the findings suggest a more complex pattern than a simple direct association. Doomscrolling showed no significant bivariate association with academic burnout where poorer sleep quality was consistently related to higher burnout.Importantly, when sleep quality was modeled as a mediator with the relationship between doomscrolling and burnout became evident through an indirect pathway that indicates sleep-related processes may help explain how negative content consumption is linked to academic well-being in this population. These findings contribute novel evidence from a non-Western university context whereas digital media use is rapidly increasing and academic pressures remain substantial (Marelli et al., 2020; Islam et al., 2021).

A particularly notable result was the counterintuitive association between doomscrolling and sleep quality. Contrary to theoretical expectations and prior research on late-night screen exposure and higher doomscrolling was associated with fewer self-reported sleep disturbances. One plausible interpretation

is that this pattern reflects limitations inherent to subjective sleep reporting rather than a genuine protective association. Self-reported sleep measures may be influenced by recall bias, normalization of chronic tiredness or limited awareness of sleep disruption which can create discrepancies between perceived sleep and objective sleep indices (Vinter, 2019; Mamun et al., 2021). Another possibility is coping-motivated media use includes students under academic or emotional strain may engage in online scrolling as a short-term emotion regulation strategy and this coping perception may reduce the salience of sleep complaints even if sleep architecture is affected. Such coping-based explanations remain plausible in student populations where academic stress and late-night media use frequently co-occur (Drăghici & Cazan, 2022). However, the brevity of the sleep measure used may not fully capture key dimensions such as sleep latency, sleep efficiency, circadian misalignment or daytime dysfunction at which may be more sensitive to nocturnal digital behaviors. Together, these considerations highlight the importance of interpreting the doomscrolling sleep association cautiously and of validating sleep findings using more comprehensive or objective assessments in future work.

Despite the unexpected bivariate association with sleep, the mediation analysis indicated that sleep quality functioned as a statistically meaningful pathway linking doomscrolling to burnout. The model demonstrated an inconsistent mediation pattern in which the indirect and direct components were in opposite directions, consistent with a suppression dynamic. Substantively, this suggests that the sleep variable may be absorbing variance that obscures the relationship between doomscrolling and burnout in the zero-order association and that the association between doomscrolling and burnout becomes clearer once sleep-related variance is taken into account. Although such patterns can arise from methodological features (e.g., measurement characteristics), they can also reflect underlying complexity in how students experience digital distress, sleep perceptions and academic exhaustion simultaneously. This aligns with broader frameworks proposing that personal resources (such as restorative sleep) shape vulnerability to academic strain and burnout, consistent with stress adaptation perspectives (Xu et al., 2025) and with models emphasizing the role of protective resources in buffering stress-related outcomes (Stewart et al., 2021).

The observed relationship between poorer sleep quality and higher academic burnout was consistent with a substantial body of evidence linking sleep disruption to impaired emotional regulation, reduced cognitive functioning, and exhaustion-related outcomes. In student populations, insufficient or disturbed sleep has repeatedly been associated with burnout symptoms, decreased engagement and reduced academic functioning, supporting the view that sleep is a key mechanism through which stressors translate into academic depletion (Hwang & Kim, 2022). Within this context, doomscrolling may be conceptualized as a digital stressor that contributes to cognitive arousal and rumination and may reduce recovery opportunities specifically when it occurs at night. While the present study's sleep findings were counterintuitive at the correlational level, the mediation results nevertheless underscore sleep as a critical variable for understanding the linkage between distressing content exposure and burnout risk.

From an applied standpoint, these findings carry practical implications for universities and student support services in Bangladesh. Because sleep quality was strongly related to burnout and appeared

central to the broader pathway, interventions that strengthen sleep hygiene may offer a feasible entry point for burnout prevention. Universities may consider psychoeducation and counseling initiatives focused on nighttime media boundaries, healthier information consumption habits, and sleep-friendly routines. Such measures may be particularly relevant given widespread smartphone engagement among students and the growing role of digital platforms in academic and social life (Islam et al., 2021). Importantly, interventions need not focus only on reducing screen time; they can also target the emotional and cognitive drivers of doomscrolling such as worry-based checking or rumination that may intensify academic exhaustion and undermine recovery (Drăghici & Cazan, 2022).

Several limitations should be considered when interpreting these findings. First, the cross-sectional design does not allow causal inference. Although mediation analysis provides evidence for an indirect pathway, the temporal ordering of doomscrolling, sleep disturbances and burnout cannot be established. Reverse or reciprocal pathways remain plausible, including the possibility that students with higher burnout engage in doomscrolling as a maladaptive coping strategy. Longitudinal studies are needed to clarify directionality. Second, reliance on self-reported measures, especially for sleep which may have introduced reporting bias and contributed to the counterintuitive doomscrolling-sleep association. Prior work has documented discrepancies between perceived and objectively measured sleep, underscoring the need for stronger validation (Vinter, 2019; Mamun et al., 2021). Third, unmeasured confounders may have shaped the observed pattern. Factors such as stress, anxiety, depressive symptoms, chronotype, bedtime smartphone use, caffeine intake and academic workload may influence both doomscrolling and sleep outcomes and future studies should incorporate these covariates. Finally, the sample consisted of Bangladeshi undergraduates recruited through online channels that may limit generalizability to students with lower internet exposure or different educational contexts.

Finally, this study highlights that the relationship between doomscrolling and academic burnout may not be evident at the bivariate level but becomes meaningful when sleep quality is considered as an intervening process. While the doomscrolling–sleep association was counterintuitive in self-reports, the broader pattern supports the importance of sleep in understanding academic well-being. Future research should employ longitudinal designs and objective sleep measures to clarify mechanisms and to inform targeted interventions that promote healthier digital habits and stronger recovery routines among university students.

7. Limitations and Recommendations for Future Research

Like any empirical study, several limitations should be acknowledged. The use of self-reported measures as mentioned particularly for sleep quality that may have introduced reporting bias and may partly account for the unexpected association between higher doomscrolling and fewer reported sleep disturbances. In addition, the cross-sectional design limits causal interpretation as it is not possible to determine whether doomscrolling influences changes in sleep and burnout over time or whether students experiencing academic exhaustion are more likely to engage in doomscrolling as a coping behavior. The study also did not assess several potentially important psychological and behavioral

factors that includes stress, anxiety, depressive symptoms, bedtime smartphone use, chronotype and caffeine intake that may have influenced the observed relationships.

Future research should address these limitations by adopting longitudinal or experimental designs and by incorporating objective assessments of sleep. Studies using more representative sampling strategies and examining diverse cultural and institutional contexts would further strengthen the generalizability of findings. Additionally, intervention-based research focusing on healthier digital behaviors, improved sleep practices and emotion regulation may provide valuable insights into effective approaches for reducing academic burnout associated with doomscrolling..

8. Conclusion

This study examined how doomscrolling relates to academic burnout among Bangladeshi undergraduates and whether sleep quality explains this association. Doomscrolling was not directly associated with burnout at the bivariate level. However, when sleep quality was considered suddenly a meaningful indirect association emerged. Although students who engaged more in doomscrolling did not report poorer sleep and the mediation model revealed a suppression pattern which highlights sleep quality as a key pathway linking distressing digital consumption to academic burnout.

The findings contribute to existing theories of psychological strain by positioning doomscrolling as a behavioral stressor that operates through disruptions in a critical personal resource sleep. From a practical perspective, the results emphasize the importance of interventions that promote healthier digital habits, clearer nighttime media boundaries and improved sleep hygiene within university settings. While the cross-sectional design and reliance on self-report measures limit causal interpretation at that time the study provides a foundation for future longitudinal and intervention-based research. As digital engagement continues to intensify in students' daily lives, understanding and addressing the role of sleep may be essential for protecting academic well-being and mental health.

Declarations

AI Usage Declaration

Generative Artificial Intelligence (AI) tools that includes ChatGPT. We were used only for language refinement and writing assistance during the preparation of this manuscript. All research ideas, experimental design, data analysis, interpretations and scientific conclusions were fully developed by the authors without AI involvement. The authors have carefully reviewed and verified all AI-assisted text to ensure accuracy, originality and academic integrity. The full responsibility for the content of this manuscript lies solely with the authors.

Competing Interests

The authors declare that they have no competing financial or non-financial interests related to this work.

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Data Availability
The datasets analysed during the current study are available from the corresponding author upon reasonable request.

Ethical Approval and accordance

The study protocol was reviewed by the Department of Agricultural Economics, Faculty of Agricultural Economics & Agribusiness Studies, Khulna Agricultural University, Bangladesh. As Khulna Agricultural University does not currently have a formally constituted Institutional Review Board (IRB) or Research Ethics Committee, the requirement for formal ethical approval was officially waived at the departmental level.

All study procedures were conducted in accordance with recognized ethical principles for research involving human participants and complied with relevant guidelines and regulations, consistent with the principles of the Declaration of Helsinki.

Informed consent

Informed consent was obtained electronically from all participants prior to data collection. Participation was voluntary and anonymous. Participants were informed about the purpose of the study, what participation involved, and their right to decline participation or withdraw at any time without any penalty. No personally identifiable or sensitive information was collected.

Consent to publish
All authors consent to the publication of this manuscript. The data used are anonymized and do not contain any identifiable personal information.

Clinical trial number: not applicable.

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