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Fear of Missing Out Syndrome and its Impact on Sleep Quality in Medical Students: A Cross-sectional Study

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Abstract

Objective Fear of missing out (FOMO) is a type of social anxiety defined as "intense concern that others may be experiencing rewarding experiences without one's presence," which can lead to illness. Excessive smartphone use is often associated with FOMO. This study aimed to investigate FOMO among medical university students, as well as factors associated with sleep quality, anxiety, depression, and excessive smartphone use.

Materials and Methods A cross-sectional observational study was conducted using electronic questionnaires and the following scales: FOMO scale/score, Pittsburgh Sleep Quality Index (PSQI), Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), and Smartphone Addiction Scale Short Version (SAS SV).

Results Participants included 142 individuals (mean age 23.73 ± 4.98 years, 97 [68.3% female]). All participants were smartphone users. Fear of missing out was present (FOMO score 22.08 ± 6.71) along with poorer sleep quality (PSQI 7.26 ± 3.08) and excessive smartphone use (SAS SV 30.21 ± 10.20). Moderate/severe anxiety (BAI) was reported by 35.2% of participants, while 16.9% had moderate/severe depression (BDI). Positive correlations were found between PSQI and FOMO ($p < 0.05$), as well as between SAS SV and FOMO ($p < 0.001$), PSQI ($p < 0.001$), BAI ($p < 0.001$), and BDI ($p < 0.001$).

Discussion High levels of FOMO, poorer sleep quality, symptoms of depression, anxiety, and excessive smartphone use were found among medical students. Furthermore, a positive correlation was demonstrated between these factors, which can directly impact the physical and mental health, as well as the academic performance of these young individuals.

Keywords
- sleep
- quality of life
- anxiety
- depression
- smartphone
- social media

HEADINGS: Sleep. Quality of Life. Anxiety. Depression. Smartphone. Social Media.

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Introduction

The fear of missing out (FOMO) syndrome is characterized as a type of social anxiety that can be defined as "intense concern or apprehension that others may be having rewarding experiences without the individual being present"[1]. This reflects a condition of anxiety due to the possibility that others in one's social circle may have more "interesting and desirable lives", which is closely associated with symptoms of irritability, loneliness, and feelings of social inadequacy.[2]

The term FOMO was first mentioned in the media around the 2010s, when the use of social media skyrocketed worldwide.[3] The numerous applications available in the virtual world allow users to share their activities and keep track of what others are doing in real time. As a result, these platforms can trigger a sense of distress for some individuals, leading to a *fear of missing out*[4].

Furthermore, the image portrayed on these social networks is often ideal, attractive, and socially desirable, which triggers negative social comparisons, along with social pressure and resistance to disengage. Thus, the syndrome is also associated with recurrent and active use of social media at night, as most young adults have electronic devices available in their bedrooms. This habit acts as a barrier to obtaining adequate sleep, considering the quality, duration, and latency. Many individuals may unknowingly turn to those media to cope with sleep difficulties, potentially exacerbating the problem.[2,4] Moreover, excessive smartphone use can contribute to psychological disorders such as anxiety and depression, which are frequently diagnosed in university students and known to have a negative impact on sleep quality.[5]

Knowledge about FOMO is limited due to its direct association with recent technological advancements and behavioral changes brought about by new media and social networks, despite being a part of the daily lives of most young adults. Particularly, medical students are more likely to use social media and, given the challenges they face in their academic life, are more susceptible to anxiety and depression, warranting careful monitoring.[6]

A common pathway to the need for self-satisfaction, inherent in FOMO, can lead to another modern problem: excessive smartphone use can manifest as addiction. Described as a form of technological addiction, it refers to "an inability to regulate smartphone use that eventually leads to negative consequences and impairment in daily life," directly impacting the quality of life and leading to the development of physical and mental illnesses.[7]

Therefore, the present study aimed to investigate the prevalence of FOMO among medical students. Also, factors associated with its impact on sleep quality, presence of anxiety and depression symptoms, and the association with excessive smartphone use and addiction.

Materials and Methods

Study Design

This was a cross-sectional observational study conducted with medical students. Data collection took place from February until April 2023. All students enrolled at the course were invited, and consecutively selected to participate in the study. Eligible participants were those: aged 18 years or older, duly enrolled in the Medicine course, and who agreed to participate in the research by signing the informed consent form (ICF). Participants who had a diagnosed sleep disorder or did not consent to sign the ICF were excluded from the study.

Questionaries

Individuals were evaluated for the presence of FOMO, measured using the fear of missing out scale (FOMO scale/score). They were also assessed for sex, age, undergraduate course period, engagement in physical activity, use of medication for sleep or to maintain wakefulness/attention, smoking status, use of e-cigarettes, and smartphone use, as well as for sleep quality, anxiety, and depression.

Data collection was conducted through an electronic questionnaire. Six applicable questionnaires were used in combination. Initially, participants were asked to provide information regarding age, sex (male or female), undergraduate course period, engagement in physical activity, use of smartphones, use of medication for sleep or wakefulness/attention, smoking status, and use of e-cigarettes through this questionnaire. Subsequently, specific questionnaires were administered.

The FOMO scale/score includes 10 items on a 5-point Likert scale, with scores for each item ranging from 1 (not at all true for me) to 5 (extremely true for me). Scores for all 10 items were calculated to provide an overall score ranging from 10 to 50. A score above 10 was considered clinically relevant, with severity increasing as the scale score directly increased.[1]

The Pittsburgh Sleep Quality Index (PSQI), translated, adapted, and validated for Brazilian Portuguese, was also used. The seven components (subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction) were evaluated, with a score above 5 indicating sleep disorder.[8,9]

The Beck Anxiety Inventory (BAI) validated for Portuguese, a scale that determines the presence and intensity of anxiety symptoms, was applied. The total anxiety level (sum of scores from the 21 items) is classified as minimal (0–7 points), mild (8–15 points), moderate (16–25 points), or severe (26–63 points).[10,11] Additionally, the Beck Depression Inventory (BDI), also in Portuguese, was used to recognize and measure the intensity of depression symptoms. The obtained scores were divided into minimal (0–11), mild (12–19), moderate (20–35), and severe (36–63).[10]

The Smartphone Addiction Scale (SAS) was used to identify individuals with smartphone addiction, using its simplest, objective, and inclusive version for the adolescent population (SAS-SV), adapted to Portuguese. A higher score indicates higher levels of smartphone addiction. Based on the score, individuals can be classified as *having smartphone addiction*, with a cutoff point for classification at > 30.[11]

With this, we hypothesize a high prevalence of FOMO among medical students, as well a poor sleep quality, presence of anxiety and depression symptoms, and the association with excessive smartphone use and addiction.

Statistical Analysis

The statistical processing was performed using specific software programs: IBM SPSS Statistics for Windows, Version 20.0 (IBM Corp., Armonk, NY, USA); SigmaPlot version 12.0 (Systat Software, Inc., San Jose, CA, USA); and Jamovi Version 2.3.2.1 (The Jamovi Project, Sidney, Australia). A descriptive analysis (frequency, distribution, mean, median, standard deviation) of the investigated variables was conducted, and the Kolmogorov-Smirnov test was used to assess the normality of the sample distribution for quantitative variables. Subsequently, multivariate analyses of the outcome variable were performed with each independent variable, using the Pearson Correlation test with respective posttests, to assess the association between FOMO and the components of BAI, BDI, PSQ, and SAS-SV. A one-way analysis of variance (ANOVA) with posthoc analysis was used for intergroup comparisons. A p-value ≤ 0.05 was considered significant. An a priori power analysis was conducted using G*Power version 3.1.9.7 (Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. Heinrich Heine University, Düsseldorf, Germany)[12] to determine the minimum sample size required to test the study hypothesis. Results indicated the required sample size to achieve 95% power for detecting a medium effect, at a significance criterion of $\alpha = 0.05$, was $n = 176$ participants. Chronbach Alpha tests were performed to measure the internal consistency of the questionnaires. A value of $\alpha \geq 0.7$ was at least considered *acceptable*.

Ethics

The research was approved by the Ethics Committee of Centro Universitário João Pessoa under protocol CAAE: 65189922.1.0000.5176, with a digital format of the ICF, based on Resolution No. 466/12 and No. 510/16 of the Brazilian National Committee of Health/Health Ministry.

Results

A total of 142 individuals (►**Table 1**) participated in the study, with a mean age of 23.73 ± 4.98 years old. Most of the participants were female (n = 97 [68.3%]). Regarding the stage of their medical course, 37% were in the early stages (1st–5th semester), while 26% were in the 6th to 9th semester, and 26.7% were in the 10th to 12th semester (in Brazil, the total graduation corresponds to 12 semesters). Among them, 108 (76.1%) engaged in physical activity. All participants (142 [100%]) used smartphones, either for leisure or study purposes.

Regarding substance use that may interfere with the analyzed variables, only 34 participants reported using medication, with 13 (9.2%) using sleep-inducing or sleep-maintaining medications, and 21 (14.8%) using medications for attention and wakefulness. Additionally, 30 individuals reported nicotine consumption, with 8 (5.6%) being traditional smokers using manufactured cigarettes and 22 (15.5%) using e-cigarettes (regardless of the generation).

All of the applied questionnaires met an at least acceptable Cronbach Alpha coefficient, showing consistency of the answers, with the respective values: FOMO score - $\alpha = 0.769$; PSQI - $\alpha = 0.740$; BAI - $\alpha = 0.892$; BDI- $\alpha = 0.912$; and SAS-SV - $\alpha = 0.863$.

Table 1 Characteristics of the study population.

		Participants – N (%)
N		142
Age (mean ± SD)		23.73 ± 4.98
Gender – Female (%)		97 (68.3)
Course period (semester)	1–5 (%)	53 (37.3)
	6–9 (%)	37 (26)
	10–12 (%)	52 (26.7)
Physical activity = Yes (%)		108 (76.1)
Sleep medication = Yes (%)		13 (9.2)
Wakefulness/attention medication = Yes (%)		21 (14.8)
Smoking = Yes (%)		8 (5.6)
E-cigarette use = Yes (%)		22 (15.5)
Smartphone use = Yes (%)		142 (100%)
FOMO score (mean ± SD)		22.08 ± 6.71
PSQI TOTAL (mean ± SD)		7.26 ± 3.08
PSQI > 5 = Yes (%)		119 (83.8)
BAI (mean ± SD)		13.68 ± 10.77
Classification BAI (%)	Minimal	50 (35.2)
	Mild	42 (29.6)
	Moderate	29 (20.4)
	Severe	21 (14.8)
BDI (mean ± SD)		10.27 ± 8.85
Classification BDI (%)	Minimal	75 (52.8)
	Mild	43 (30.3)
	Moderate	17 (12.0)
	Severe	7 (4.9)
SAS SV score (mean ± SD)		30.21 ± 10.20

Abbreviations: BAI, Beck Anxiety Index; BDI, Beck Depression Index; E-cigarette, electronic cigarette; FOMO, fear of missing out; PSQI, Pittsburgh Sleep Quality Index; SAS SV, Smartphone Addiction Scale Short Version; SD, standard deviation.

After applying the scores, a mean FOMO score of 22.08 ± 6.71 was found, indicating the presence of FOMO in the study population. Additionally, the average PSQI score was 7.26 ± 3.08, indicating sleep impairment in the population, with 119 individuals (83.8%) scoring above 5 (considered the threshold for impaired sleep). In the specific item of the PSQI regarding self-reported justifications for sleep disturbances (►**Table 2**), 46 individuals (32% of the total sample) reported that feelings of anxiety were the reason for their restless nights. Furthermore, five of them mentioned discomfort related to sleep environment, while three admitted to perceiving the direct impact of smartphone use. Additionally, three individuals reported issues related to parenthood, while two mentioned excessive use of drugs such as alcohol and illicit drugs.

Regarding the applied anxiety and depression scales, the mean score on the BAI was 13.68 ± 10.77 (►**Table 1**), with 40 individuals (35.2%) meeting the criteria for moderate/severe

Table 2 Reasons for difficulty sleeping in PSQI (Pittsburgh Sleep Quality Index).

	N (%)
Anxiety	46 (32.4)
Discomfort with sleep environment	5 (3.5)
Parenthood	3 (2.1)
Smartphone use	3 (2.1)
Acute illness (such as flu)	2 (1.4)
Alcohol and/or illicit drug abuse	2 (1.4)
Grief	1 (0.7)
Others	3 (2.1)

anxiety, while 50 (35.2%) did not have a relevant classification based on the proposed scoring. On the BDI, the average score was 10.27 ± 8.85. Among the participants, 75 (52.8%) did not have a statistically significant score, while 24 (16.9%) met the criteria for moderate/severe depression. The participants exhibited smartphone addiction, with a mean SAS SV score of 30.21 ± 10.20.

Analyzing the interactions between the applied scales using the Pearson correlation matrix (►**Table 3**. ►**Fig 1**), a positive correlation was found between the total PSQI score and the FOMO score ($R = 0.147$; $p = 0.04$), confirming the initial hypothesis that FOMO phenomenon correlates with poor sleep quality, as measured by the PSQI. There was also a positive correlation between a higher level of anxiety reported on the BAI and FOMO ($R = 0.318$; $p < 0.001$) and PSQI ($R = 0.605$; $p < 0.001$), indicating an association between anxiety, the development of FOMO, and poor sleep quality. The BDI was positively correlated with poor sleep quality assessed by the PSQI ($R = 0.635$; $p < 0.001$).

Excessive smartphone use and dependence, as measured by the SAS SV score, were positively correlated with the FOMO score ($R = 0.372$; $p < 0.001$), PSQI ($R = 0.272$; $p < 0.001$), BAI ($R = 0.329$; $p < 0.001$), and BDI ($R = 0.259$; $p < 0.001$), indicating that individuals who are more addicted to devices are more likely to develop FOMO, experience poor sleep quality, higher levels of depression, and greater anxiety symptoms.

In the analysis between groups classified by the BAI (►**Table 4**; ►**Figure 2**), there was statistical significance regarding FOMO when comparing the group with the minimum score to those with significant scores (vs. mild – $p < 0.05$; vs. moderate – $p < 0.05$), with the comparison being even more significant when compared to the severe classification group ($p < 0.001$). However, no significant differences were found between the groups based on the BDI.

When comparing groups in terms of the impact on sleep quality using the PSQI, there was statistical significance between groups based on the BAI (►**Table 4**; ►**Figure 2**). The group with the minimum scale score had a lower score compared to the mild ($p < 0.01$), moderate ($p < 0.001$), and severe ($p < 0.001$) groups. Additionally, there was statistical significance when comparing the mild vs. severe ($p < 0.001$) and moderate vs. severe ($p < 0.001$) groups. Finally, when comparing sleep quality with the BDI, there were statistically significant differences between the minimum vs. mild ($p < 0.001$), moderate ($p < 0.001$), and severe ($p < 0.001$) groups, as well as between the mild vs. severe group ($p < 0.05$). Thus, poor sleep quality was correlated with higher complaints related to anxiety and depression.

Discussion

In the present study, a predominant FOMO was found in the studied population. The mean FOMO score was found to be 22.08 ± 6.71, indicating its presence in the population. Fear of missing out is particularly described among young individuals, especially in Western society, as a phenomenon of anticipatory anxiety due to the need to make a better and more rewarding choice among the presented options. Immersed in a digital and dynamic environment where multiple options are easily available at all times, the younger generations are more affected by this phenomenon. The main susceptible audience to these choices are young adults of university age, such as the studied sample.[13,14] Medical students, as well as students from other healthcare courses, are particularly more susceptible to FOMO,[15,16] due to the high demand of the course itself,

Table 3 Pearson correlation matrix.

		Age	Course Period	FOMO SCORE	PSQI TOTAL	BAI	BDI	SAS SV score
Age	R Pearson	—						
Course Period	R Pearson	0.116	—					
FOMO SCORE	R Pearson	−0.232	0.049	—				
PSQI TOTAL	R Pearson	0.050	−0.185	0.147*	—			
BAI	R Pearson	−0.161	−0.174	0.318***	0.605***	—		
BDI	R Pearson	0.008	−0.112	0.121	0.497***	0.635***	—	
SAS SV score	R Pearson	−0.146	−0.028	0.372***	0.272***	0.329***	0.259***	—

Abbreviations: BAI, Beck Anxiety Index; BDI, Beck Depression Index; E-cigarette, electronic cigarette; FOMO, fear of missing out; PSQI, Pittsburgh Sleep Quality Index; SAS SV, Smartphone Addiction Scale Short Version.
*$p < 0.05$.
**$p < 0.01$.
***$p < 0.001$.

Table 4 Comparison between FOMO score and PSQI among groups of BAI and BDI.

		Minimal	Mild	Moderate	Severe
FOMO score	Minimal	–	−3.74*	−4.08*	−6.65***
X	Mild	–	–	−0.33	−2.90
BAI	Moderate	–	–	–	−2.57
Mean difference (*p*)	Severe	–	–	–	–
FOMO score	Minimal	–	−1.62	−4.41	2.17
X	Mild	–	–	−2.80	3.79
BDI	Moderate	–	–	–	6.59
Mean difference (*p*)	Severe	–	–	–	–
PSQI	Minimal	–	−1.80**	−2.89***	−5.54***
X	Mild	–	–	−1.09	−3.74***
BAI	Moderate	–	–	–	−2.65**
Mean difference (*p*)	Severe	–	–	–	–
PSQI	Minimal	–	−2.31***	−2.87***	−5.48***
X	Mild	–	–	−0.56	−3.17*
BDI	Moderate	–	–	–	−2.61
Mean difference (*p*)	Severe	–	–	–	–

Abbreviations: BAI, Beck Anxiety Index; BDI, Beck Depression Index; FOMO, fear of missing out; PSQI, Pittsburgh Sleep Quality Index; SAS SV, Smartphone Addiction Scale Short Version.
*$p < 0.05$.
**$p < 0.01$.
***$p < 0.001$.

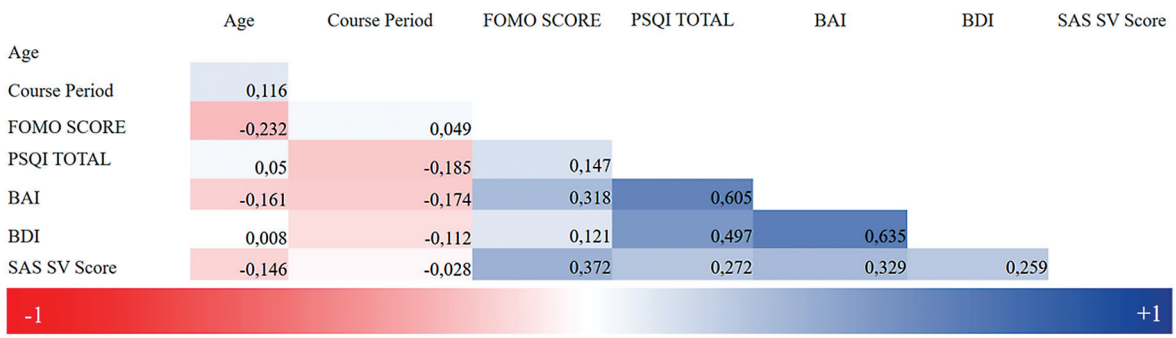

Fig. 1 Pearson Correlation Matrix - Color Map. BAI, Beck Anxiety Index; BDI, Beck Depression Index; FOMO, fear of missing out; PSQI, Pittsburgh Sleep Quality Index; SAS SV, Smartphone Addiction Scale Short Version.

associated with the inherent social demands and desires of this age group, FOMO becomes a distracting factor and is detrimental to performance in university students (another source of associated anxiety). In our study, there was a positive correlation between FOMO, poor sleep quality, and higher complaints related to anxiety.

Medical students have a heavy academic workload, which can potentially contribute to poor sleep quality beyond what is already experienced by the modern society. The prevalence of sleep disorders is higher among medical students compared to non-medical students and the general population.[17,18] Several factors, including medical students' attitudes and academic demands,[19] have been identified as causal factors, but other potential mechanisms are not fully understood, including FOMO. In a study conducted in Lithuania, more than half (59.4%) of university students scored > 5 on the PSQI, indicating poor sleep quality. In this sample, medical students studied for longer periods and had less leisure time and social contact compared to Economics and Law students.[20] These factors may be related to a higher susceptibility to developing FOMO due to the perceived need to optimize experiences at the expense of less time for extracurricular activities. In our study, we found a higher incidence of impaired sleep, with PSQI scores above 5 in 83.8% of participants, and a mean value of 7.26 ± 3.08. A better understanding of the etiology of sleep problems in medical students is essential for overall better quality of life and academic performance.

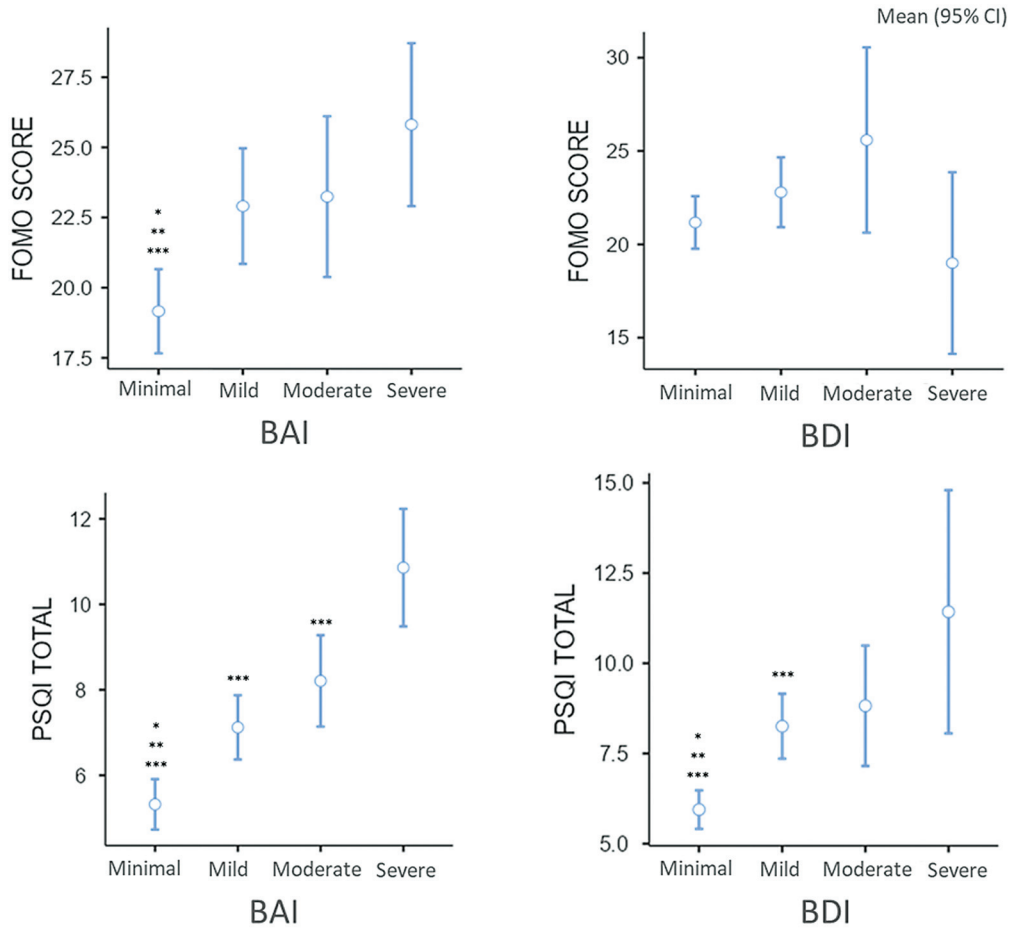

Fig. 2 Comparison between FOMO score and PSQI among groups of BAI and BDI. $^{*}p < 0.05$ vs. Mild $^{**}p < 0.05$ vs. Moderate $^{***}p < 0.05$ vs. Severe. BAI, Beck Anxiety Index; BDI, Beck Depression Index; FOMO, fear of missing out; PSQI, Pittsburgh Sleep Quality Index; SAS SV = Smartphone Addiction Scale Short Version.

Users of social media with high levels of FOMO are more likely to develop insomnia.[3,21,22] However, other studies have failed to correlate it with reduced sleep quality. In contrast, in our study, the presence of FOMO was directly correlated with poor sleep quality measured by the PSQI, as presented in ►**Table 3**. One explanation for this could be a poor sleep hygiene associated with excessive technology-related consumption. In a study conducted by Gomes, FOMO showed a significant negative relationship with sleep hygiene and was thus considered a predictor of poor sleep hygiene.[2] Therefore, the relationship between FOMO and the nighttime use of social media and streaming platforms at bedtime, as well as its impact on sleep hygiene, allows us to understand that this is a relevant factor for poor sleep quality.

Fear of missing out is directly correlated with the development of anxiety and depression, as well as the severity of these conditions.[23,24] In our study, there was a correlation between FOMO and the development of anxiety and depression. However, no differences were found between the levels of depression and FOMO, unlike anxiety. In addition, individuals with FOMO are more prone to developing compulsive behaviors, such as nicotine consumption. In our study, 30 individuals reported nicotine consumption, with 8 (5.6%) being traditional tobacco smokers and 22 (15.5%) being e-cigarette users. In contrast to the findings of Martins et al., who reported a prevalence of 4.6% e-cigarette users among medical students, our sample showed a prevalence approximately three times higher for this new form of nicotine consumption.[25] One possible hypothesis for the difference found is a high presence of FOMO in our sample.

The correlation between sleep disorders and psychiatric diseases, especially mood and anxiety disorders, is widely known, as the presence of psychiatric illness can complicate the diagnosis and treatment of sleep disorders. Sleep disorders can be a comorbidity, a cause, or a symptom of psychiatric disorders.[26] The Johns Hopkins Precursors Study, a long-term prospective study with 1,053 medical students, demonstrated that sleep complaints in young men were a major risk factor for subsequent clinical depression and psychiatric distress that persisted for at least 30 years.[27] A study conducted by Hidalgo and Caumo showed a 5.47 times higher chance of developing a psychiatric disorder among medical students with sleep complaints.[28] In our study, in addition to a positive correlation between the Pittsburgh Sleep Quality Index (PSQI) and higher scores on specific anxiety and depression questionnaires, there were differences between groups, indicating that higher sleep complaints were associated with greater anxiety and

depression symptoms. Furthermore, self-reported anxiety symptoms were the main factors reported to have a negative impact on sleep (►**Table 2**).

Sleep disorders can lead to substance abuse, whether of legal or illegal drugs. In order to regulate the sleep/wake cycle, students may use sleep medications, wakefulness and attention medications, or even resort to alcohol and other drugs. The ultimate consequence of such behaviors can result in a "stimulant-sedation cycle," which involves using stimulants to counteract daytime sleepiness and subsequently using sedatives to counteract the effects of those stimulants[29]. In our sample, in addition to nicotine consumption, a stimulant substance, 13 (9.2%) individuals reported using sleep-inducing or sleep-maintenance medications, and 21 (14.8%) reported using medications for attention and wakefulness maintenance. Furthermore, two individuals reported abusive use of alcohol and illegal substances.

The use of mobile technologies such as smartphones has become ubiquitous in recent years. Smartphones are devices capable of processing games, internet browsing, social media, streaming videos, in addition to the basic telephone feature. Adverse health outcomes associated with constant smartphone use have been identified, including obesity, decreased physical activity, and reduced wellbeing, with increased levels of anxiety, depression, and poor sleep quality.[30] The impact is not only directly related to smartphone use, as screen exposure has a negative effect on the circadian rhythm and melatonin production, which also interferes with sleep quality.[21] An Israeli study with 467 university students found a positive correlation between poor sleep hygiene and smartphone use, FOMO, and anxiety.[31] Positive correlations between excessive smartphone use, depression and anxiety symptoms, as well as poor sleep quality assessed by the PSQI, were found among Turkish university students,[5,32] similar to findings among Germans,[33] Chinese,[7] and Indian[30] students, indicating that the impact is independent of the prevailing cultural context. In our study with Brazilian medical students, we were able to demonstrate a positive correlation between excessive smartphone use, FOMO, poor sleep quality assessed by the PSQI, and symptoms of anxiety and depression.

Our study has limitations. Firstly, the sample size may limit the power and interpretation of the findings and confidence intervals. The a priori power analysis conducted using G*Power determined a minimum sample size to achieve 95% power detecting a medium effect, at a significance criterion of $\alpha = 0.05$, of 176 participants. However, for an 80% power, a number of at least 102 participants was acceptable (our study has 142), and most of the findings are consistent with those of previous studies, which mitigates this possibility. Secondly, a gender imbalance in the sample restricts the generalizability of the results. However, the regression analysis results remained unchanged when gender was included as a covariate. Thirdly, self-reported data collection is limited as individuals may be more inclined to report socially acceptable experiences. However, in our sample, no such profile was identified, with participants even reporting illicit substance use and personal life details in questionary fields where it was possible, aided by the anonymity effect that allowed for more sincere responses. Fourthly, the studied population consisted of medical students, limiting the generalizability of the findings to this group. Nonetheless, due to the characteristic diversity of the Brazilian population, this effect may be minimized. Lastly, the population predominantly consisted of young adults, and older age groups may not experience the characteristic social impact that contributes to the development of FOMO. Further studies are needed to address the reported limitations. Nevertheless, this study remains relevant. The results of this study are valuable as they provide new insights into the complexity of the relationships examined, the impact of smartphone use, and contribute to the evidence and knowledge on a topic with limited presence in the literature. Additionally, this study was conducted in the postpandemic context of coronavirus disease 2019 (COVID-19), when the use of mobile and electronic devices such as smartphones reached its peak and is likely to persist in this manner due to its addictive potential.

In conclusion, we found high levels of FOMO, poor sleep quality, symptoms of depression, anxiety, and excessive smartphone use among medical students. Furthermore, a positive correlation was demonstrated among these factors, which can directly impact the physical and mental health, as well as the academic performance of these young individuals.

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Conflict of Interests
The authors have no conflict of interests to declare.

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