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**ANALYSIS OF THE ASSOCIATION  
BETWEEN NOMOPHOBIA AND ANXIETY IN  
EIGHTH SEMESTER MEDICAL STUDENTS  
OF THE UNIVERSIDAD REGIONAL DEL  
SURESTE**

**ANÁLISIS DE LA ASOCIACIÓN ENTRE NOMOFobia Y  
ANSIEDAD EN ESTUDIANTES DE OCTAVO SEMESTRE DE  
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## **Analysis of the Association between Nomophobia and Anxiety in Eighth Semester Medical Students of the Universidad Regional del Sureste**

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### **ABSTRACT**

The technological transformation of recent decades has radically changed how people access and process information, especially by integrating smartphones into everyday life. This phenomenon has brought with it both benefits and challenges, among which the emergence of nomophobia, as well as associated anxiety symptoms, stand out. The study was conducted with eighth semester medical students at the Universidad Regional del Sureste. The target population included all the students of that academic cycle, applying inclusion and exclusion criteria to guarantee its homogeneity. Two validated instruments were used for data collection: the Nomophobia Questionnaire (NMP-Q) and the Generalized Anxiety Disorder Scale (GAD-7). Data processing was carried out by descriptive and correlational statistical analysis, respecting the ethical principles of confidentiality. The results showed that 94.4% of the students evaluated presented some degree of nomophobia, manifesting behaviors such as compulsive telephone checking. It was identified that 66.5% of the participants reported clinically significant levels of anxiety. Statistical analysis showed a positive and significant relationship between levels of nomophobia and anxiety. There is a high prevalence of nomophobia and anxiety in medical students; it should be considered necessary to implement strategies for the prevention and management of excessive use of mobile devices, as well as to strengthen psychoemotional support in medical training.

**Keywords:** anxiety, nomophobia, medical students, smartphones

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# **Análisis de la Asociación entre Nomofobia y Ansiedad en Estudiantes de Octavo Semestre de Medicina de la Universidad Regional del Sureste**

## **RESUMEN**

La transformación tecnológica de las últimas décadas ha cambiado radicalmente la manera en que las personas acceden y procesan información, especialmente con la integración de los teléfonos inteligentes en la vida cotidiana. Este fenómeno ha traído consigo tanto beneficios como retos, entre los cuales destaca la aparición de la nomofobia así como de síntomas de ansiedad asociados. El estudio se realizó con estudiantes de octavo semestre de medicina de la Universidad Regional del Sureste. La población objetivo incluyó a todos los estudiantes de ese ciclo académico, aplicando criterios de inclusión y exclusión para garantizar la homogeneidad de la misma. Para la recolección de datos se utilizaron dos instrumentos validados: el Cuestionario de Nomofobia (NMP-Q) y la Escala para el Trastorno de Ansiedad Generalizada (GAD-7). El procesamiento de los datos se llevó a cabo mediante análisis estadístico descriptivo y correlacional, respetando los principios éticos de confidencialidad. Los resultados mostraron que el 94.4% de los estudiantes evaluados presentaron algún grado de nomofobia, manifestando conductas como la verificación compulsiva del teléfono. Se identificó que el 66.5% de los participantes reportaron niveles clínicamente significativos de ansiedad. El análisis estadístico evidenció una relación positiva y significativa entre los niveles de nomofobia y ansiedad. Existe una alta prevalencia de nomofobia y ansiedad en estudiantes de medicina, se debe de considerar necesaria la implementación de estrategias de prevención y manejo del uso excesivo de dispositivos móviles, así como de fortalecer el apoyo psicoemocional en la formación médica.

**Palabras clave:** ansiedad, nomofobia, estudiantes de medicina, teléfonos inteligentes

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## INTRODUCTION

The word addiction is often associated with harmful substances such as alcohol or drugs, but its scope is broader. Anyone can become addicted to objects or activities that meet specific characteristics if they have conditions that make them vulnerable. One of the most important is the lack of self-control, which can transform initially harmless behaviors into addictive habits. Thus, addiction involves not only chemical dependence but also behavioral dependence, reflecting a complexity that goes beyond what is commonly understood (Köpetz et al., 2013). The popularity of smartphones has grown enormously, raising concerns about their addictive potential. Although psychology initially focused addiction on non-substance gambling, excessive smartphone use has been the subject of increasing study (Wacks & Weinstein, 2021). However, addiction to these devices is not officially recognized in manuals such as the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) or the International Classification of Diseases (ICD-11) (Paschke et al., 2021). Recent research shows that compulsive phone use can cause symptoms similar to other addictions, such as anxiety, irritability, and concentration problems, as well as being linked to mental disorders such as depression and stress (Ratan et al., 2021; Hartogsohn et al., 2023).

The dependence on and attraction to cell phones has given rise to several phases and terms that describe different aspects of addiction. Prominent among these are conditions such as nomophobia, textibility, ringxiety, textaphrenia, the “phantom ringing/vibration syndrome”, and commufaking. These terms reflect problematic states that arise from excessive and compulsive use of mobile devices and the adverse social outcomes that can result from this behavior (Lee et al., 2018). Nomophobia, in particular, focuses on smartphone dependence but with a specific focus on the constant availability of communication. This involves access to tools and applications that provide information and, above all, communication. Nomophobia offers a unique perspective on smartphone use, which is of particular interest from a coping perspective. While other terms focus on the adverse effects of excessive use, nomophobia highlights the importance of constant availability and the impact this has on human behavior (Rodríguez-García et al., 2020; Garcia-Portocarrero et al., 2025).

Some of these terms, such as ringing/phantom vibration syndrome, reflect the intensity of the psychological dependence that can develop. Others, such as textaphrenia, describe anxiety or fear of not



receiving messages or calls. Taken together, these terms illustrate the complexity of cell phone addiction and the need to approach it from multiple perspectives to better understand its causes and consequences (Mangot et al., 2018). Cell phone addiction manifests itself in various forms: impulsive use, use as an escape or to avoid direct interaction, and dependence marked by long periods of use (De-Sola Gutiérrez et al., 2016). Those affected tend always to have chargers and experience anxiety about losing access to the device (Bhattacharya et al., 2019). The phenomenon of “ringxiety” (compulsion to check notifications), keeping the phone on day and night, and sleeping near it is observed. Direct social interaction decreases, which increases isolation, anxiety, and stress. Financial problems may also arise due to excessive spending on cell phone use (Subba et al., 2013).

Nomophobia and anxiety represent two emerging psychosocial phenomena that have gained prominence in the last decade, particularly in high-demanding academic settings such as medical schools. Global studies, such as those conducted in Saudi Arabia (Alkalash et al., 2023) and India (Sharma et al., 2019), reveal that between 85% and 99% of medical students present some degree of nomophobia, with up to 40% at severe levels. In parallel, anxiety affects 82.19% of this population (Bano et al., 2021), configuring a scenario where both conditions coexist and feedback on each other. This bidirectional cycle is aggravated in medical contexts, where the need to consult clinical protocols, communicate with multidisciplinary teams, and access digital educational platforms normalizes the constant use of the device, increasing dependence.

Nomophobia not only affects mental health but also compromises essential clinical competencies. Students with severe nomophobia report a 30% decrease in concentration during hospital internships<sup>16</sup> and a greater propensity for error in diagnostic simulations, according to Abukhanova et al. (2024). In the case eighth semester students at the Universidad Regional del Sureste (URSE), this pairing takes on a critical dimension due to the unique demands of their training: transition to clinical rotations, pressure to perform on standardized exams, and prolonged exposure to digital technologies as pedagogical tools. This study analyzed the association between nomophobia and anxiety in eighth semester medical students at the URSE.



## **METHODS**

The study was observational since the researcher did not intervene in the variables, allowing the data to reflect the natural evolution of the phenomena. The scope was analytical, as comparisons between groups were analyzed, and associations between variables were sought to establish possible relationships. The design was cross-sectional, measuring variables at a single point in time and providing a snapshot of the data. The universe and study population were the eighth semester students enrolled in the Faculty of Medicine and Surgery, URSE, from August 2024 to June 2025. The study was conducted following the guidelines established in the Declaration of Helsinki and evaluated by the Research Committee of the Faculty of Medicine and Surgery of the URSE; since it is a cross-sectional study and a questionnaire was applied, informed consent will be tacit, as will the safeguarding of the information following the protection of personal data.

### **Data collection techniques**

We used the technical survey in its virtual modality to collect the data, which allowed us to obtain primary source information. Three strategies were applied to ensure that our target sample completed the instrument. First stage: Through the institutional emails provided, the link to the Google Forms form was sent to the selected individuals. Second stage: We coordinated with the teachers and coordinator of the eighth semester of study to share the link to the form with the selected individuals. Third stage: This stage focused on approaching those individuals with whom it was impossible to establish contact in the previous stages. It consisted of interacting with students through social networks and cell phone numbers, offering the exact retribution as in the second stage.

### **Data collection instruments**

A self-applied instrument in virtual format was used, lasting approximately 10 to 15 minutes, structured in the following parts: Sociodemographic data: age and sex.

Nomophobia was measured using the NMP-Q, which consists of 20 questions with scores measured on a Likert scale from 1 to 7. The total scores will vary from 20 points (20x1) to 140 points (20x7). This scale will be interpreted as no nomophobia with a score of 20, mild between 21-59, moderate between 60-99, and severe between 100-140 points. The instrument has been validated in Spanish, showing a Cronbach's alpha of 0.95, and has also been validated in Mexican students.



Anxiety: it was measured using the GAD-7, which consists of 7 items with Likert-type responses, with a minimum value of 0 and a maximum of 3. This will allow categorizing anxiety as without anxiety (0-4) and with anxiety (5-21). In addition, anxiety can be categorized in degrees: mild (5-9), moderate (10-14), and severe (15-21). The instrument has been validated in Spanish, showing a Cronbach's alpha of 0.92, and has also been validated in Mexican students.

The information collected through the Google Form will be exported to Microsoft Excel 2017 for coding and cleaning. The data will be double and independently typed, ensuring quality and consistency. Duplicate records, inconsistent, incomplete, or double responses will be excluded. Subsequently, the data will be transferred to the SPSS version 22 statistical package for analysis. Initially, the presence of missing or duplicate data will be rechecked. The descriptive analysis will be performed according to the type of variable: quantitative variables will be expressed by arithmetic mean and standard deviation, provided they present normal distribution, verified by visual methods and normality tests such as Shapiro-Wilk, considering normality when  $p \geq 0.05$ . The Chi-square test and the odds ratio (OR) were used to analyze the relationship between nomophobia and anxiety, considering statistical significance with  $p < 0.05$ .

## RESULTS

The study sample consisted of 155 subjects out of 160 subjects. They were demographically distributed as follows: 56.1% were female while 43.2% were male, with a mean age of  $22.1 \pm 1.2$  years. Of the total number of medical students, 94.4% of the participants presented some degree of nomophobia, while only 5.6% were free of this condition. This data is particularly relevant, as it indicates that the vast majority of these future health professionals experience, to a greater or lesser extent, anxiety or discomfort related to the absence or limited use of their mobile devices. Women predominate within the small group without nomophobia, accounting for 77.8%, compared with 22.2% of men. This distribution suggests that the absence of nomophobia is more frequent in women.

When analyzing the population with nomophobia, a slight female predominance is observed, with 54.4% of women compared to 45.6% of men. Although not very marked, this difference could be related to sociocultural and psychological factors that influence the use of and dependence on technology. Women tend to maintain more active social networks and may experience greater pressure to be available and





connected, which could explain this trend.

The severity of nomophobia was classified as mild, moderate, and severe. Of the students with nomophobia, 57.1% reported a mild level, with a female majority of 58.3%. As for moderate nomophobia, 35.4% of the participants reported it. In this group, the gender distribution is slightly inverted, with 48% of females and 52% of males. A severe degree of nomophobia was reported by 7.5% of the students, with a female predominance of 54.5%.

Only 33.5% of the students evaluated did not present symptoms of anxiety. This group was composed of 40.1% women and 59.9% men. In contrast, 66.5% of the students manifested some degree of anxiety, which means that two out of three medical students experience anxiety at some level. Within this group, the proportion of females is notably higher, representing 65% compared to 35% of males.

A breakdown of the anxiety levels shows that most cases correspond to mild anxiety, with 66% of the students affected. Of these, 63.2% are female and 36.8% male. Moderate anxiety affects 23.3% of the students, of whom 62.5% are female and 37.5% male. Severe anxiety, although less frequent, affects 10.7% of the sample, with a marked female predominance: 81.8% of the cases are female, and only 18.2% are male.

The results of the analysis showed a statistically significant association between the presence of nomophobia and anxiety in medical students ( $\chi^2 = 6.501$ ,  $p = 0.005$ ) (see Table 1). Furthermore, the calculated odds ratio was 6.587, indicating that students with nomophobia are approximately 6.6 times more likely to have anxiety compared to those without nomophobia. These findings suggest a strong relationship between the two conditions, highlighting the importance of addressing nomophobia as a relevant factor in the mental health of this population.

## **DISCUSSION**

Of the study subjects, 94.4% presented some degree of nomophobia. Nomophobia, defined as the irrational fear of being without a cell phone or without access to the connectivity it provides, has become an increasingly frequent phenomenon, especially among young university students. This disorder, although not yet officially recognized in diagnostic manuals such as the DSM-V, has been the subject of growing interest due to its impact on mental health and academic performance. In particular, medical students are a vulnerable group, given the high demands and stress they face during their training, which





may enhance dependence on cell phones as a coping or escape mechanism (Kaviani et al., 2020).

When analyzing the population with nomophobia, 54.4% were women, and 45.6% were men. This difference may be related to sociocultural and psychological factors that influence the use of and dependence on technology. Women tend to maintain more active social networks and may experience greater pressure to be available and connected, which could explain this tendency.

This level implies that those affected experience some discomfort or anxiety when they do not have immediate access to their phone, but it does not significantly interfere with their daily activities. However, the high prevalence of this grade indicates that cell phone dependence is widespread and normalized among medical students

35.4% of the participants manifested moderate nomophobia. This indicates that, as the severity increases, the proportion of affected males increases, approaching and even slightly surpassing that of females. Moderate nomophobia is characterized by more intense anxiety, which can affect concentration, academic performance, and interpersonal relationships. In medical students, this condition may interfere with maintaining attention in class, performing clinical practice, or managing the stress associated with their training.

Severe nomophobia involves a significant level of anxiety and discomfort, which can manifest itself in physical symptoms such as tachycardia, sweating, tremors, and panic attacks in the absence of a cell phone. This level of dependence can severely affect mental health and general well-being, as well as compromising academic and social performance. The fact that more than half of the severe cases are women is consistent with other studies suggesting a greater female vulnerability to anxiety-related disorders and technology dependence.

These results reflect a complex and multifaceted problem. The high prevalence of nomophobia in medical students may be linked to several factors. On the one hand, the cell phone is an indispensable tool for accessing medical information, communicating with classmates and professors, and managing schedules and activities. On the other hand, excessive or compulsive use can generate a dependency that affects mental health and quality of life. The academic pressure, stress, and anxiety inherent to a medical career can increase this dependence, turning the cell phone into a refuge from the demands of the environment (Charry-Jiménez et al., 2024).



Nomophobia may be associated with other psychological disorders, such as social anxiety and depression, which are common in college students. Previous studies have found a significant correlation between nomophobia and social anxiety, suggesting that cell phone dependence may be both a cause and a consequence of difficulties in relating to others and managing stress. In this sense, nomophobia is a technological problem and an indicator of emotional and social vulnerabilities that require integrated attention (Mohani et al., 2024).

The gender distribution found in the study also indicates differences in the use of and relationship with technology between men and women. Women, presenting a higher prevalence in mild and severe degrees, could be more exposed to the adverse effects of this dependence, possibly due to social factors that promote greater connectivity and availability. Males, on the other hand, show a higher proportion of moderate nomophobia, which could reflect different patterns of use or coping strategies.

Faced with this reality, educational and health institutions must implement strategies to prevent and manage nomophobia in medical students. This implies promoting responsible and balanced use of technology and offering psychological support and spaces for developing emotional and social skills. Education about the risks of technology dependence, together with stress and anxiety management programs, can contribute to reducing the prevalence and severity of nomophobia (Daei et al., 2019).

Promoting activities that encourage disconnection and direct contact between people is necessary, strengthening interpersonal relationships and autonomy. The promotion of healthy habits, such as setting limits on cell phone use and practicing relaxation techniques, can be beneficial to improve the overall well-being of students.

Anxiety is an increasingly frequent phenomenon among university students, and in particular, among medical students, who face a considerably high academic and emotional burden. The results obtained in this study provide a clear and worrying insight into the prevalence and degrees of anxiety in this population, as well as the gender differences that exist in the manifestation of this disorder. The anxiety results obtained in the study subjects highlight several issues of great relevance. First, the high prevalence of anxiety among medical students is alarming. The fact that two-thirds of the students present some degree of anxiety indicates that this problem is systemic and not an exception. This could be related to high academic demands, performance pressure, internal competition, and constant exposure



to emotionally intense situations, such as contact with patients and the management of serious diseases. One of the most striking observations is the significant difference between females and males in the prevalence as well as the severity of anxiety. In all degrees of anxiety, women are overrepresented, and this difference is accentuated as the severity of the disorder increases. In severe anxiety, for example, more than 80% of cases are women.

This finding is consistent with previous studies that have shown that women tend to report higher levels of anxiety than men, both in the general population and in college and medical students. There may be multiple reasons for this difference (Farhane-Medina et al., 2022). On the one hand, there are biological and hormonal factors that predispose women to experience anxiety more frequently. On the other hand, social and cultural factors also play an essential role: women tend to face higher social expectations and often have fewer coping resources available or less social support in competitive environments (McLean et al., 2011).

Gender socialization may influence how men and women perceive and report their symptoms. Men may tend to minimize or underreport their anxiety symptoms because of cultural stigmas that associate emotional vulnerability with weakness (Farhane-Medina et al., 2022).

The presence of anxiety in medical students is not a minor issue, as it can have serious consequences both academically and personally. Academically, anxiety can negatively affect concentration, memory, and performance on exams, which in turn can perpetuate a cycle of stress and underachievement. On a personal level, anxiety can impair quality of life, affect interpersonal relationships, and increase the risk of developing other psychological disorders such as depression (McCurdy et al., 2022).

Severe anxiety, although less common, is especially worrisome because of its debilitating impact. Students experiencing this level of anxiety may become overwhelmed, unable to cope with the demands of the program, and, in extreme cases, may consider dropping out or developing risky behaviors (England et al., 2019).

## CONCLUSIONS

The study provides updated evidence on the relationship between nomophobia and anxiety in eighth semester medical students at the Universidad Regional del Sureste. In an environment where mobile technology is essential for academic and personal life, it is key to understand its psychological



repercussions, especially in populations subjected to high stress, such as medical students. The results show a high prevalence of both conditions. Chi-square statistical analysis confirmed a significant association ( $\chi^2 = 6.501$ ,  $p = 0.005$ ), and the odds ratio (OR = 6.587) indicated that students with nomophobia are more than six times more likely to have anxiety than those without nomophobia. Nomophobia, defined as the irrational fear of being without access to a cell phone, has ceased to be anecdotal and has become a relevant mental health problem among young university students. In medical students, technological dependence is enhanced by the need for constant access to academic information and social networks. However, when device use becomes a source of anxiety, it affects emotional well-being and academic performance. The high percentage of anxiety and its strong association with nomophobia suggest that the medical and educational environment, due to its demands and competitiveness, may be an additional risk factor for addictive behavior toward technology.

The relationship between the two variables appears to be bidirectional: anxiety can lead to compulsive use of the cell phone as a coping mechanism, while the inability to access the device can trigger or aggravate anxious symptoms, creating a vicious circle. This phenomenon is especially relevant in the era of hyperconnectivity, where immediacy has transformed social and academic dynamics. From a clinical and educational perspective, the results underscore the need for prevention and mental health promotion strategies in the university setting. Institutions must recognize nomophobia and anxiety as emerging problems that require priority attention. Integrating responsible digital education programs, stress management workshops, and psychological support spaces can help reduce the incidence and impact of these disorders. In addition, it is essential to promote emotional and technological self-regulation and train teachers and staff in the early detection of warning signs.

This study opens new lines of research on individual, social, and contextual factors that mediate the relationship between nomophobia and anxiety. Future longitudinal studies allow us to analyze these phenomena's evolution and evaluate the effectiveness of preventive and therapeutic interventions. Among the limitations is that the cross-sectional design prevents us from establishing causal relationships, and using self-reports may introduce biases. Despite this, the robustness and consistency of the results support the validity of the conclusions. The digital revolution brings benefits but also unprecedented challenges for mental health, and this study lays the groundwork for future actions aimed



at building healthier and more resilient educational environments.

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## ANNEX

**Table 1.** Results of the Chi-square test of association and measure of strength (OR) between nomophobia and anxiety in the study subjects

	Anxiety (YES)	Anxiety (NO)	Total
Nomophobia (YES)	101	46	147
Nomophobia (NO)	2	6	8
Total	103	52	155
Statistic	Value	Interpretation	
Chi-square ( $X^2$ )	6.501	Significant difference between observed and expected frequencies.	
Value p	0.005389	Statistically significant association ( $p < 0.05$ ).	
Odds Ratio (OR)	6.587	Risk or OR 6.6 times higher in exposed group.	

