Revista Española
de Educación Médica

# *Smartphone* Use and its Influence on Anxiety, Personal Satisfaction and Academic Performance in University Students.

# Uso del teléfono móvil y su Influencia en la Ansiedad, Satisfacción Personal y Rendimiento Académico en los Estudiantes Universitarios.

**Byron Geovanny Hidalgo-Cajo[1]*, Galo Patricio Silva-Borja[2], Fredy Roberto Hidalgo-Cajo[3], Iván Mesías Hidalgo-Cajo[4].**

[1] Faculty of Health Sciences, National University of Chimborazo, Ecuador, bhidalgo@unach.edu.ec , https://orcid.org/0000-0002-5526-1676
[2] Faculty of Educational Sciences, Humanities and Technologies, National University of Chimborazo, Ecuador, gsilva@unach.edu.ec , email, https://orcid.org/0000-0002-7118-0673
[3] Faculty of Political and Administrative Sciences, National University of Chimborazo, Ecuador, fhidalgo@unach.edu.ec , https://orcid.org/0000-0001-6873-7250
[4] Faculty of Public Health, Higher Polytechnic School of Chimborazo, Ecuador, mesias.hidalgo@espoch.edu.ec , https://orcid.org/0000-0002-9059-0272
* Correspondence: bhidalgo@unach.edu.ec

Received: 4/9/25; Accepted: 29/10/25; Published: 31/10/25

**Abstract.** This research examines the influence of excessive mobile phone use on three key dimensions of university life: anxiety, perceived personal satisfaction, and academic performance. A quantitative approach was adopted with a non-experimental, cross-sectional design and a descriptive-correlational scope. Validated psychometric instruments were used, including the Mobile Phone Dependence and Addiction Scale (EDAS), the Beck Anxiety Inventory (BAI), the Satisfaction with Life Scale (SWLS), and the University Academic Performance Scale (RAU), administered to a sample of 370 students. The findings revealed that students with greater mobile phone dependence exhibited significantly higher levels of anxiety, lower academic performance, and higher levels of personal life satisfaction. It is concluded that constant interaction on social networks and mobile applications fostered anxiety by generating a persistent need for connection, which negatively impacted students' emotional well-being. Furthermore, this technological distraction decreased concentration and academic organization, negatively impacting academic performance. Additionally, an increase in personal satisfaction was observed, which may have been related to a feeling of emotional disconnection or social isolation. These results underscore the need to promote educational strategies that encourage a balanced use of technology, minimizing its negative effects in the academic context.

**Keywords:** Technological dependence, Academic performance, Anxiety, Personal satisfaction, University students.

**Resumen.** La investigación examina la influencia del uso excesivo del teléfono móvil en tres dimensiones clave de la vida universitaria: la ansiedad, la percepción de satisfacción personal y el desempeño académico. Se adoptó un enfoque cuantitativo con un diseño no experimental de tipo transversal y un alcance descriptivo-correlacional. Se emplearon instrumentos psicométricos validados, entre ellos la Escala de Dependencia y Adicción al móvil (EDAS), el Inventario de Ansiedad de Beck (BAI), la Escala de Satisfacción con la Vida (SWLS) y la Escala de Rendimiento Académico Universitario (RAU), administrados a una muestra de 370 estudiantes. Los hallazgos revelaron que los estudiantes con mayor dependencia al móvil manifestaron niveles

significativamente elevados de ansiedad, con un bajo rendimiento académico y altos niveles de satisfacción personal con la vida. Se concluye que la interacción constante en redes sociales y aplicaciones móviles fomentó estados de ansiedad al generar una necesidad permanente de conexión, lo que afectó el bienestar emocional de los estudiantes. Asimismo, esta distracción tecnológica disminuyó la concentración y la organización académica, repercutiendo de forma negativa en el rendimiento y desempeño universitario. Además, se observó un incremento en la satisfacción personal, que pudo estar relacionado con un sentimiento de desconexión emocional o aislamiento social. Estos resultados subrayan la necesidad de promover estrategias educativas que favorezcan un uso equilibrado de la tecnología, minimizando sus efectos negativos en el contexto académico.

**Palabras clave:** Dependencia tecnológica, Rendimiento académico, Ansiedad, Satisfacción personal, Estudiantes universitarios.

## 1. Introduction

Since the late 20th century, mobile phones have evolved from simple communication devices into ubiquitous, multifunctional tools. Today, mobile phones not only allow calls and messages, but also integrate browsing, social networking, educational and entertainment applications, ubiquitous internet access, and numerous computer-like functions. This technological evolution has altered both daily habits and the cognitive and emotional frameworks of individuals, especially university students.

Mobile phones are now everyday tools that, thanks to their ability to replace many computer functions, have been fully integrated into various aspects of human life, including educational, work, and social contexts. According to the United Nations, more than 75% of the world's population owns a mobile phone and more than 65% use the internet (1). In Ecuador, data from the National Institute of Statistics and Censuses reveals that 62.9% of citizens have an active mobile phone, with 55.5% of users being over five years old (2).

Intensive mobile phone use among university students has been associated with adverse effects on their mental health (e.g., anxiety), personal satisfaction, and academic performance. While many features of these devices are beneficial, such as access to information, instant communication, and flexibility, excessive or poorly regulated use can lead to distraction, stress, sleep disturbances, and a worsening of emotional state (3). These effects have been observed to impact academic productivity, manifesting as lower grades, procrastination, difficulty concentrating, and imbalances in academic and personal life satisfaction.

This research focuses on university students because they constitute a particularly vulnerable population, going through intense periods of academic demands, social transition, and adaptation to professional roles, which makes them more susceptible to external factors (such as mobile phone use) modulating their anxiety, subjective well-being, and performance (4). Furthermore, given that their stage of education demands high levels of continuous performance, concentration, and emotional resilience, any factor that negatively impacts them represents a risk not only to themselves but also to institutions and society as a whole. Understanding how mobile phone use relates to anxiety, personal satisfaction, and academic performance can inform educational health policies, psychological interventions, and curriculum design that is more attentive to the student's overall well-being.

Multiple studies have demonstrated this relationship. For example, in Saudi Arabia, at Umm Al-Qura University, it was found that approximately 67% of university students were addicted to their mobile phones, and this condition was correlated with lower academic performance, poor

sleep quality, and mental health problems (5). In Thailand, a study with pharmacy students reported that almost half of the sample (49%) were addicted to their mobile phones, and that prolonged use was associated with health problems such as anxiety, headaches, insomnia, and stress (6). Similarly, research by Alhassan et al. (7) shows that mobile phone addiction is correlated with symptoms of anxiety, depression, poor sleep quality, sedentary lifestyle, and lack of physical activity; for example, a sample of 383 students showed that those who used their mobile phones for longer periods were more likely to experience anxiety and depression. Studies on device dependence have also been conducted in Latin American contexts: one focused on Ecuadorian university students found that almost half of the participants reported dependence on mobile devices, use of more than three hours a day, and correlations with anxiety or depression (8).

From this perspective, the objective of the research arises from the need to generate contextualized empirical evidence that allows identifying and analyzing the relationship between excessive mobile phone use and levels of anxiety, personal satisfaction and academic performance in students of the National University of Chimborazo for the academic period 2024.

## 2. Methods

The study was conducted using a quantitative approach, with a non-experimental, cross-sectional, and descriptive-correlational design. This methodological choice allowed for the analysis of statistical relationships between the main variables, such as mobile phone use, anxiety, personal satisfaction, and academic performance, without manipulation of the observed factors. The applied nature of the research reflects the purpose of generating empirical evidence useful for understanding and improving student well-being in higher education (9). The study was carried out during the 2024 academic year at the National University of Chimborazo (UNACH), Ecuador. The cross-sectional design provided a significant snapshot of the technological and psychoeducational phenomenon in that context. The total population consisted of 9,829 students enrolled in on-campus programs. From this population, a stratified probability sample of 370 participants was selected, proportionally distributed among faculties and programs, ensuring institutional representativeness.

The inclusion criteria were: (a) being of legal age, (b) being officially enrolled at UNACH during 2024, (c) owning a mobile phone, and (d) providing informed consent. Participants with a history of prior psychiatric diagnosis or with incomplete data on the applied instruments were excluded.

The research did not receive formal approval from an institutional ethics committee, as the university did not have an operational committee for non-clinical studies at the time of its execution. However, the ethical principles of the Declaration of Helsinki (2013) and international standards for educational research were followed. All participants received clear information about the objectives, data confidentiality, and their right to withdraw at any time (10). Informed consent was obtained digitally before the questionnaire began. Data collection was carried out using a structured questionnaire, composed of demographic variables and four internationally validated psychometric instruments:

- Mobile Phone Dependence and Addiction Scale (EDAS-18): measures the degree of technological dependence in three dimensions (compulsive use, abstinence, and dysfunction). It consists of 18 items in 5-point Likert format (1 = never, 5 = always). The total score classifies dependence into low (score < 30), medium (score 31 to 49), or high (score ≥ 50) levels (11).

- Beck Anxiety Inventory (BAI): assesses cognitive, affective, and somatic symptoms of anxiety. It consists of 21 items with responses on a 4-point Likert scale (0–3). The results classify anxiety into low (0–21), moderate (22–35), and high (≥ 36) levels (13).
- Satisfaction with Life Scale (SWLS): a 5-item instrument that measures the cognitive evaluation of subjective well-being (14). It uses a Likert scale from 1 to 5; it is distributed for the study as follows: Dissatisfied (1-8), Satisfied (9-17), and Very Satisfied ≥ 18.
- University Academic Performance Scale (RAU): developed based on self-reported academic indicators (weighted average, compliance and participation). It consists of 20 Likert-type items of 7 points (0-6), classifying academic performance as low, medium and high (15).

The instruments demonstrated high internal consistency ($\alpha = 0.927$), assessed using Cronbach's alpha coefficient in a 10% subsample. This value falls within the optimal range (> 0.80) recommended for studies in the social and health sciences (16). The questionnaire was distributed in person at the educational institution. Participation took approximately 20 minutes, and the data were exported to IBM SPSS Statistics version 26 for analysis. An initial cleaning was performed by removing incomplete responses and verifying assumptions of normality and homoscedasticity.

The statistical analysis was developed at three levels.

- Descriptive: frequencies, percentages and measures of central tendency (mean, standard deviation) were calculated to characterize the sociodemographic and psychometric variables.
- Inferential: Chi-square tests of independence ($\chi^2$) were applied to evaluate the relationship between the categorical variables (dependence, anxiety, satisfaction and performance), with a significance level of $p < 0.05$.
- Correlational: Spearman's correlation coefficient ($\varrho$), suitable for non-parametric ordinal variables, was used to determine the direction and intensity of the relationships between mobile phone dependence and the psychological dimensions assessed.

## 3. Results

The results presented are based on a sample of 370 students who use mobile phones at the National University of Chimborazo (UNACH) during the 2024 academic year. Starting with this sample, the results are presented by showing the age distribution of the participants, disaggregated by sex, in order to demographically characterize the study population and contextualize the findings in relation to the main variables of the study. Figure 1 shows a higher concentration of students in the 18-29 age range, indicating a predominance of young people in the initial, middle, and final stages of their university studies. A slightly higher participation of females is also observed in almost all age ranges, except in the 27-29 age group, where males predominate. This distribution reflects a predominantly young, female sample of university students.

These data provide a significant basis for the subsequent analysis of the study's central variables, as they allow the results to be contextualized according to the sociodemographic characteristics of the sample, which could influence the levels of anxiety, academic performance, and personal satisfaction addressed in this research.

Analysis of mobile phone use among university students reveals a significant diversity in the activities performed, with chat standing out as the primary function employed (28.38%). This result shows that instant communication is central to device use, reflecting students' need to maintain continuous, real-time social connection. This pattern suggests that mobile phones play a leading role in daily interaction and the management of personal relationships, even more so than their academic or informational functions.

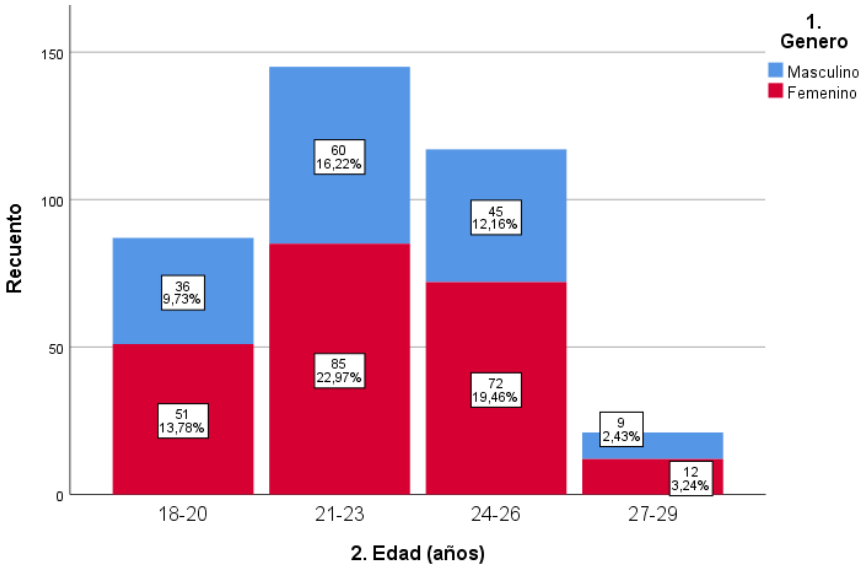


**Figure 1.** Distribution of the student sample by age and gender

**Table 1.** Uses of the mobile phone by university students.

| Uses | n | % |
|---|---|---|
| Games | 24 | 6.49 |
| Study | 41 | 11.08 |
| Internet | 50 | 13.51 |
| Social networks | 52 | 14.05 |
| Calls | 98 | 26.49 |
| Chat | 105 | 28.38 |
| **Total** | **370** | **100** |

The analysis shows that, after chat, calls (26.49%) are the second most frequent activity, confirming the continued relevance of verbal communication as a complement to written interaction. Thirdly, the use of social networks (14.05%) reflects students' preference for digital spaces for socialization and information, while internet access (13.51%) and academic use (11.08%) are lower, demonstrating that recreational and social functions predominate over educational ones. Finally, games (6.49%) represent the least common activity, suggesting a lower orientation towards digital entertainment. Overall, these results show that mobile phones are primarily used as a means of interaction and leisure, rather than as an educational tool, which raises challenges regarding their pedagogical use and their impact on students' emotional and academic well-being.

Table 2 presents the results of various scales administered to a sample of university students to assess aspects related to mobile phone dependence and addiction, anxiety levels, life satisfaction, and academic performance. A detailed interpretation of these results follows, considering the aspects relevant to the ongoing research. The results show a high prevalence of mobile phone dependency, with 64.9% of students falling into the high category according to the EDAS Scale, with no significant differences by gender ($p = 0.912$), indicating that device use affects men and women similarly. In the Beck Anxiety Inventory (BAI), moderate (45.4%) and high (38.4%) levels predominated, reflecting that anxiety is a relevant factor in university students' mental health, also with no significant differences between genders ($p = 0.761$). In the Satisfaction with Life Scale (SWLS), the majority of participants reported being satisfied (49.2%) or very satisfied (20.3%), showing an overall positive perception of well-being ($p = 0.929$). Regarding academic performance, assessed using the RAU Scale, 54.6% showed an average level and only 4.3% a low level ($p = 0.404$),

suggesting an overall adequate performance. In general, the results indicate that, although mobile phone dependence and anxiety are high, students maintain acceptable levels of life satisfaction and academic performance, suggesting compensatory or adaptive mechanisms in response to intensive technology use.

**Table 2.** Results of the scales according to gender.

| | Scale | Male | Female | Total | p |
|---|---|---|---|---|---|
| **EDAS** | Low | 1 | 1 | 2 | 0.912 |
| | Half | 51 | 77 | 128 | |
| | High | 98 | 142 | 240 | |
| **BAI** | Low | 22 | 38 | 60 | 0.761 |
| | Moderate | 68 | 100 | 168 | |
| | High | 60 | 82 | 142 | |
| **SWLS** | Dissatisfied | 44 | 69 | 113 | 0.929 |
| | Satisfied | 78 | 104 | 182 | |
| | Very Satisfied | 28 | 47 | 75 | |
| **RAU** | Low | 4 | 12 | 16 | 0.404 |
| | Half | 85 | 117 | 202 | |
| | High | 61 | 91 | 152 | |

Note: EDAS (Smartphone Dependence and Addiction Scale ), BAI (Beck Anxiety Inventory), SWLS (Satisfaction with Life Scale), RAU (University Academic Performance Scale)

Table 3 presents the results obtained by analyzing the relationship between levels of mobile phone dependence and addiction, measured using the Mobile Phone Dependence and Addiction Scale (EDAS), and anxiety levels, assessed using the Beck Anxiety Inventory (BAI). The data reveal a clear association between the degree of mobile phone dependence and the intensity of anxiety symptoms in university students. Statistical analysis shows a p-value of 0.000, demonstrating a significant and positive relationship between mobile phone dependence and anxiety levels. This result confirms the hypothesis that greater technological dependence is associated with greater intensity of anxiety symptoms, underscoring the influence of excessive device use on students' mental health.

**Table 3.** Relationship between mobile phone dependence and addiction (EDAS) and anxiety (BAI).

| | | BAI | | | | |
|---|---|---|---|---|---|---|
| | | **Low** | **Moderate** | **High** | **Total** | **p** |
| **EDAS** | **Low** | 1 | 1 | 0 | 2 | 0.000 |
| | **Half** | 39 | 66 | 23 | 128 | |
| | **High** | 20 | 101 | 119 | 240 | |
| | **Total** | 60 | 168 | 142 | 370 | |

The data indicate that those with high dependence tend to exhibit high anxiety, while those with low dependence show minimal levels of emotional distress. Even moderate dependence is

associated with noticeable increases in anxiety, suggesting that adverse psychological effects are evident from the early stages of use. Taken together, these findings highlight the need to promote institutional strategies for regulation and digital education aimed at reducing technological dependence and mitigating its consequences on the psychological well-being of university students.

Table 4 presents the results obtained by analyzing the relationship between levels of mobile phone dependence, assessed using the Mobile Phone Dependence and Addiction Scale (EDAS), and levels of life satisfaction, measured using the Satisfaction with Life Scale (SWLS). The data reflect a clear correlation between technological dependence and the perception of life satisfaction among university students.

**Table 4.** Relationship between mobile phone dependence and addiction and personal life satisfaction.

| | **SWLS** | | | | | |
|---|---|---|---|---|---|---|
| | **Scale** | **Dissatisfied** | **Satisfied** | **Very satisfied** | **Total** | **P** |
| **EDAS** | **Low** | 2 | 0 | 0 | 2 | 0.000 |
| | **Half** | 69 | 42 | 17 | 128 | |
| | **High** | 42 | 140 | 58 | 240 | |
| | **Total** | 113 | 182 | 75 | 370 | |

Table 4 shows the relationship between mobile phone dependence (EDAS) and life satisfaction (SWLS). It can be observed that the majority of participants with high dependence exhibit high levels of satisfaction (140) and very high satisfaction (58), while those who are dissatisfied represent a smaller proportion (42). In contrast, students with medium dependence have the highest number of dissatisfied cases (69), suggesting a non-linear relationship between the two variables. The p-value of 0.000 confirms a statistically significant association between the degree of mobile phone dependence and life satisfaction. In summary, the results show that, although higher levels of dependence are associated with some personal satisfaction, perceptions of dissatisfaction also coexist, indicating the presence of psychological or contextual factors that modulate this relationship.

Table 5 presents the results of the relationship between the Mobile Phone Dependence and Addiction Scale (EDAS), which measures the level of dependence on mobile phones, and the University Academic Performance Scale (RAU), which classifies academic performance into three categories: low, medium, and high.

**Table 5.** Relationship between mobile phone dependence and addiction and academic performance.

| | **RAU** | | | | |
|---|---|---|---|---|---|
| | | **Low** | **Half** | **High** | **Total** | **p** |
| **EDAS** | **Low** | 0 | 0 | 0 | 0 | 0.000 |
| | **Half** | 15 | 76 | 39 | 128 | |
| | **High** | 1 | 124 | 115 | 240 | |
| | **Total** | 16 | 202 | 152 | 370 | |

The p-value of 0.000 indicates a statistically significant relationship between mobile phone dependency and academic performance. This suggests that mobile phone dependency has a considerable impact on students' academic performance. The results show an inverse relationship between mobile phone dependency and academic performance. Students with moderate mobile phone dependency tend to have low performance, while students with high dependency exhibit more varied academic performance, with a greater proportion at the moderate and high levels. This pattern suggests that, while mobile phone dependency can negatively affect academic performance, the relationship is not as direct for students with high dependency, who may have an adaptive mechanism that allows them to maintain good academic performance.

## 4. Discussion

The research findings provide a more precise understanding of how mobile phone use influences the emotional well-being and academic performance of university students, highlighting the interrelationships between technology dependence, anxiety, life satisfaction, and academic achievement. These findings contribute to the growing body of evidence on the psychological impact of intensive mobile technology use in educational settings.

One of the most relevant findings is that mobile phone use was higher among females, a pattern that coincides with the findings of Andone et al. (17), who described how women tend to use mobile phones more frequently for social and emotional interaction, unlike men, whose use is more instrumental. The results of this study differ from those reported by Linares et al. (18), who found predominant use among males, primarily associated with utilitarian and leisure purposes. This divergence can be explained by cultural and contextual differences, since Linares' sample comes from more technologically developed environments, where access to and use of mobile phones by gender is more balanced. In contrast, in the Ecuadorian context, female students tend to maintain greater social and communicative involvement through mobile devices, which is associated with a search for emotional support and more active interpersonal management—characteristics observed in the literature on digital behavior from a gender perspective (19).

Regarding anxiety, a positive and significant correlation was identified between mobile phone dependence and anxiety levels, reinforcing the results obtained by Edwards et al. (20) and Xiao et al. (21), who indicated that prolonged exposure to digital interaction increases cognitive and emotional hyperarousal. This finding also aligns with the systematic review by Daraj et al. (22), which demonstrated a consistent association between excessive mobile phone use and clinical anxiety. As Hidalgo-Cajo (23) points out, this relationship is bidirectional: anxiety can be both a cause and a consequence of compulsive device use. Furthermore, the digital sedentary lifestyle described by Pereira et al. (24) and the low levels of physical activity reported by Herring et al. (25) constitute mediating factors that amplify the risk of anxiety, confirming that the phenomenon is multifactorial and not strictly causal.

Regarding personal life satisfaction, the results showed that students with medium and high mobile phone dependence reported moderate to high levels of satisfaction, which might seem contradictory to the findings of Jose et al. (26), who demonstrated a negative relationship between excessive use and subjective well-being. This difference can be explained by the fact that in the present study, students associate mobile phone use with social connectivity, access to information, and emotional support—factors that, in Latin American university contexts, can temporarily increase the perception of well-being. Furthermore, the high satisfaction could be due to an immediate gratification effect derived from frequent use of the device, a phenomenon described by Dai et al. (27), where digital social reinforcement generates a momentary sense of belonging and happiness. However, this relationship could be paradoxical and transient, since the literature indicates that the well-being derived from intensive use tends to decline over time, subsequently

leading to dissatisfaction or digital fatigue (28). Thus, the relationship observed in this study reflects more a model of emotional compensation than of genuine and sustained satisfaction.

The results regarding academic performance confirm a negative association between intensive mobile phone use and student performance. Previous research, such as that by Beiromvand et al. (29), Meskini et al. (30), and Edeh et al. (31), reports similar conclusions, indicating that excessive time spent on mobile devices decreases concentration and effective study time. This effect is reinforced by the findings of Suhail et al. (32), who demonstrated that digital multitasking during academic activities negatively impacts information retention and cognitive productivity. Therefore, the evidence suggests that mobile phone use, while it may facilitate certain communication and academic processes, constitutes a significant distraction when its use is not regulated.

In summary, the research results contribute to an interdisciplinary understanding of the phenomenon, highlighting the need to promote practices of technological self-regulation, digital literacy and psychoeducational well-being in university environments.

*Limitations*

This study has certain limitations that should be considered when interpreting its results. First, because it is a cross-sectional study based on self-report questionnaires, it is not possible to establish causal relationships or rule out potential social desirability bias in the responses, especially for sensitive variables such as anxiety or technology dependence. Furthermore, the sample was limited to a single university (UNACH), which restricts the generalizability of the findings to other educational and cultural contexts. In addition, the research did not receive formal approval from an institutional ethics committee, although the principles of confidentiality and informed consent were respected. Finally, the lack of experimental control prevents us from ruling out the influence of external factors such as academic, family, or emotional circumstances that could have affected the results. These limitations highlight the need for longitudinal and multicenter studies that incorporate contextual variables and mixed-methods designs to strengthen the validity and explanatory power of the findings.

## 5. Conclusions

- The research shows that excessive mobile phone use has a negative and multidimensional impact on student well-being, affecting the emotional, cognitive, and academic spheres.
- It was observed that technological dependence increases anxiety levels, interferes with concentration and academic performance, and generates life satisfaction based on immediate gratification rather than sustainable well-being.
- Consequently, the need is recognized for higher education institutions to develop digital literacy and mental health promotion strategies that encourage a balanced, conscious, and healthy use of mobile devices within the university environment.

**Funding**: There has been no funding.

**Declaration of conflict of interest**: The authors declare that they have no conflict of interest.

**Authors' contributions**: Study conception and design: BGHC, GPSB. Data acquisition: FRHC, SEVB. Data analysis and synthesis: BGHC, FRHC, IMHC, GPSB. Manuscript writing: BGHC, GPSB, FRHC, IMHC. Style and critical review: BGHC, FRHC.

## 6. References.

1. United Nations. Más del 75% de la población mundial tiene un teléfono celular y más del 65% usa el internet 2023. https://news.un.org/es/story/2023/12/1526712

2. INEC. 2025. Los Usuarios de Teléfonos Inteligentes (Smartphone) se Incrementaron en un 60%. https://www.ecuadorencifras.gob.ec/los-usuarios-de-telefonos-inteligentes-smartphone-se-incrementaron-en-un-60/
3. Meyerhoff, Jonah, Tony Liu, Konrad P. Kording, Lyle H. Ungar, Susan M. Kaiser, Chris J. Karr, and David C. Mohr. Evaluation of Changes in Depression, Anxiety, and Social Anxiety Using Smartphone Sensor Features: Longitudinal Cohort Study. *Journal of Medical Internet Research* **2021**, 23(9), e22844. https://doi.org/10.2196/22844
4. Lin, Y, Chih-Lin, C., Po-Hsien L., Li-Ren, C., Chih-Hung, K, Yang-Han, L, & Sheng-Hsuan L. Proposed Diagnostic Criteria for Smartphone Addiction. *PloS One* **2016**, 11(11), e0163010. https://doi.org/10.1371/journal.pone.0163010
5. Alotaibi, M., Fox, M., Coman, R., Ratan, Z., & Hosseinzadeh, H. Smartphone Addiction Prevalence and Its Association on Academic Performance, Physical Health, and Mental Well-Being among University Students in Umm Al-Qura University (UQU), Saudi Arabia. *International Journal of Environmental Research and Public Health*, **2022**, 19(6), 3710. https://doi.org/10.3390/ijerph19063710
6. Chinwong, D., Sukwuttichai, P., Jaiwong, N., Saenjum, C., Klinjun, N., & Chinwong, S. Smartphone Use and Addiction among Pharmacy Students in Northern Thailand: A Cross-Sectional Study. *Healthcare* **2023**, 11(9), 1264. https://doi.org/10.3390/healthcare11091264
7. Alhassan, M., Al-Otaibi, E., Ofaysan, M., Alarjani, K., Alzuhairi, M., Alarfaj, N., Al-Murayt, F., Alotaibi, B., Alanazi, K., Alfawaz, A., & Musa, A.Smartphone addiction and its psychosocial correlates among university students. *Cureus* **2025**. https://doi.org/10.7759/cureus.91165
8. Castillo Gonzales, M. & SEK International University. Mobile device dependence and internalizing problems in Ecuadorian university students. *Rev Eugenio Espejo*, **2025**, 46, 1–46) https://doi.org/10.37135/ee.04.23.04.
9. Hidalgo-Cajo, B., & Meneses-Freire, M. Factores de Riesgo Específicos Asociados Al Síndrome de Burnout En El Profesorado de La Universidad Nacional de Chimborazo. *Espacios*, **2024**, 45(6), 23–37. https://doi.org/10.48082/espacios-a24v45n06p03
10. Asamblea Médica Mundial. Declaración de Helsinki de la AMM - Principios éticos para las investigaciones médicas en seres humanos. *Acta Bioeth*, **2013**, 1–9. https://www.wma.net/es/policies-post/declaracion-de-helsinki-de-la-amm-principios-eticos-para-las-investigaciones-medicas-en-seres-humanos/
11. García-Domingo M, Fuentes V, Pérez-Padilla J, Aranda M. EDAS-18: validación de la versión corta de la escala de dependencia y adicción al smartphone. *Terapia Psicológica*, **2020**, 38(3), 339–361. https://doi.org/10.4067/S0718-48082020000300339
12. Beck A, Epstein N, Brown G, Steer R. An inventory for measuring clinical anxiety: Psychometric properties [Un inventario para medir la ansiedad clínica: propiedades psicométricas]. *Journal of Consulting and Clinical Psychology*, **1988**, 56(6), 893–897. https://doi.org/10.1037/0022-006X.56.6.893
13. Beck A, Steer R, Sanz J, Vallar F, De La Guía E, Hernández A, Educación P. Inventario de Ansiedad de Beck (BAI). **2013**, 1–14. https://www.cop.es/uploads/PDF/2013/BAI.pdf
14. Diener E, Emmons R, Larsen RJ, Griffin S. Escala de Satisfacción con la Vida. *Journal of Personality Assessment*, **1985**, 49(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13
15. Preciado-Serrano M, González M, Colunga-Rodríguez C, Vázquez-Colunga JC, Esparza-Zamora M, Vázquez-Juárez CL, Obando-Changuán M. Construction and validation of the university academic performance RAU scale. *Revista Iberoamericana de Diagnóstico y Evaluación Psicológica*, **2021**, 60(3), 5–14. https://doi.org/10.21865/RIDEP60.3.01
16. George D, Mallery P. *IBM SPSS Statistics 29 Step by Step: A Simple Guide and Reference* (18th ed.). Routledge, **2024**. https://doi.org/10.4324/9781032622156
17. Andone I, Konrad B, Mark E, Trendafilov C, Alexander M. How Age and Gender Affect Smartphone Usage. *Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing*, **2016**, Adjunct 9–12. https://doi.org/10.1145/2968219.2971451
18. Linares R, García-Domingo M, Amezcua T, Fuentes V, Moreno-Padilla M. Cyber-Dating Abuse in Young Adult Couples: Relations with Sexist Attitudes and Violence Justification, Smartphone Usage and Impulsivity. *PLoS One*, **2021**, 16(6), e0253180. https://doi.org/10.1371/journal.pone.0253180

19. Hidalgo-Cajo B, Gisbert-Cervera M. La adopción y el uso de las tecnologías digitales en el profesorado universitario: un análisis desde la perspectiva del género y la edad. *Revista de Educación a Distancia (RED)*, **2021**, 21(11), 1–19. https://doi.org/10.6018/red.481161
20. Edwards E, McLeod G, Khan A. Anxiety Related Distractibility Deficits: Too Much Smartphone Use Is Not Such a Smart Call. *Behaviour & Information Technology*, **2024**, 43(13), 3253–3260. https://doi.org/10.1080/0144929X.2023.2274891
21. Xiao T, Mengting P, Xiao X, Yang L. The Relationship between Physical Activity and Sleep Disorders in Adolescents: A Chain-Mediated Model of Anxiety and Mobile Phone Dependence. *BMC Psychology*, **2024**, 12(1), 751.
22. Daraj L, Muneera A, Yaser M, Khaled T, Haitham J. Systematic Review and Meta-Analysis of the Correlation Coefficients between Nomophobia and Anxiety, Smartphone Addiction, and Insomnia Symptoms. *Healthcare*, **2023**, 11, 2066. https://doi.org/10.3390/healthcare11142066
23. Hidalgo-Cajo B. Modelo de aula Ubicua en el entorno de aprendizaje mixto con enfoque social en la educación universitaria. *Espacios en Blanco. Revista de Educación*, **2024**. https://doi.org/10.37177/UNICEN/EB34-409
24. Pereira F, Guilherme G, Danilo R, Andrade A. Impact of Problematic Smartphone Use on Mental Health of Adolescent Students: Association with Mood, Symptoms of Depression, and Physical Activity. *Cyberpsychology, Behavior, and Social Networking*, **2020**, 23(9), 619–626. https://doi.org/10.1089/cyber.2019.0257
25. Herring M, Lindheimer J, O'Connor P. The Effects of Exercise Training on Anxiety. *American Journal of Lifestyle Medicine*, **2014**, 8(6), 388–403. https://doi.org/10.1177/1559827613508542
26. Jose S, Maneesha C, Cyriac S, Lidiyamol P, Dhandapani D. Impact of Problematic Mobile Phone Use among Nursing Students in India: Exploring Associations with Depression, Insomnia, Self-esteem and Satisfaction with Life. *International Journal of Nursing Practice*, **2024**, 30(5), e13247. https://doi.org/10.1111/ijn.13247
27. Dai C, Zixue T, Shan N. Smartphone Use and Psychological Well-Being among College Students in China: A Qualitative Assessment. *Frontiers in Psychology*, **2021**, 12, 708970. https://doi.org/10.3389/fpsyg.2021.708970
28. Samaha M, Hawi N, Salameh N. Digital fatigue and subjective well-being among heavy smartphone users. *Frontiers in Psychology*, **2023**, 14, 1123796. https://doi.org/10.3389/fpsyg.2023.1123796
29. Beiromvand A, Shahnaz K, Shadi T, Reza B, Hanieh A, Kianpour M, Sadeghi N. Relationship between Cellphone Overuse with Sleep Quality and Self-Efficacy in Clinical Performance of Nurse and Midwifery Students. *Iranian Journal of Nursing and Midwifery Research*, **2024**, 29(6), 709–713. https://doi.org/10.4103/ijnmr.ijnmr_8_23
30. Meskini N, Zakaria F, Mouloud L, Sfendla A, Laarbi O. The Association Between Excessive Smartphone Use, Insomnia, and Academic Performance Among Middle School Adolescents in Morocco. *E3S Web of Conferences*, **2024**, 477, 58. https://doi.org/10.1051/e3sconf/202447700058
31. Edeh F, Blessing F, Collins I, Mundu M, Ainebyoona C, Dayo D, Neji D, Lilian A, Najjuma A. Smartphone Usage and Academic Performance of Management Science Students in an Emerging Economy. *Management*, **2024**, 9(3), 516–532. https://doi.org/10.32535/ijabim.v9i3.3593
32. Suhail T, Indiradevi E, Suresh A, Ayyappan A. Smartphone Distractions and Cognitive Performance in Adolescents: An Electroencephalography Approach. *Basic & Clinical Neuroscience*, **2025**, 16(1). https://doi.org/10.1089/ciber.2019.0257