Article

Sleep Quality Related to Internet Addiction in University Students in Ñuble, Chile, 2023

Vanessa Valentina Aldea-Parra
https://orcid.org/0009-0002-3646-4854
Universidad Adventista de Chile, Chile
vanessaaldea@alu.unach.cl

Javiera Andrea Anabalón-Henríquez
https://orcid.org/0009-0001-7803-2809
Universidad Adventista de Chile, Chile
javieraanabalon@alu.unach.cl

✉ ***Sandra Cecilia Henríquez-Figueroa***
https://orcid.org/0000-0001-9156-8037
Universidad Adventista de Chile, Chile
sandrahenriquez@unach.cl

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Theme: Coping and adaptation to heatlh

Contribution to the field: Because proper sleep is essential to physical and mental well-being, investigating the relationship between sleep quality and Internet addiction in college students is crucial. Concern about the impact of sleep deprivation on the quality of sleep among young college students is increasing and may negatively affect their academic performance and overall health. This analysis improves the understanding of how Internet use habits can affect students' sleep patterns, allowing nursing professionals to create effective treatments to promote healthy sleep and prevent health problems related to Internet addiction in the future.

Abstract

Introduction: The Internet has transformed the daily lives of young people, facilitating their virtual education and their communication with the world. However, in recent years, Internet addiction has increased worryingly, characterized by excessive dependence and problematic behaviors, which can affect the quality of sleep, essential for human life. **Objective:** To relate sleep quality to Internet addiction in university students in Ñuble, Chile. **Material and methods:** Quantitative, correlational research, using two validated questionnaires: The Internet Addiction Test and the Pittsburgh Sleep Quality Index. The sample is comprised of 230 students from a private university. The data obtained are analyzed using Jamovi software for the normality test and the Spearman correlation coefficient. **Results:** The data reveal a majority of female population, between 20 and 25 years old, in the Nursing program. The relationship between sleep quality and Internet addiction is statistically significant and shows a weak positive correlation. This pattern is repeated for subjective sleep quality and sleep duration. However, its alterations do not show a significant relationship. **Conclusion:** A weak relationship is confirmed between sleep quality and Internet addiction in university students from Ñuble. The detailed results underline the importance of addressing sleep health in the context of Internet addiction, highlighting the need for preventive and intervention measures that significantly contribute to improving well-being and quality of life.

Keywords (Source: DeCS)
Internet addiction; sleep quality; student health; online social networks; rest.

Calidad de sueño y su relación con la adicción a internet en estudiantes universitarios en Ñuble, Chile, 2023

Resumen

Introducción: el internet ha transformado la vida cotidiana de los jóvenes, facilitando su educación virtual y su comunicación con el mundo. Sin embargo, en los últimos años ha aumentado de manera preocupante la adicción a internet, caracterizada por la dependencia excesiva y los comportamientos problemáticos, que pueden afectar la calidad del sueño, esencial para la vida humana. **Objetivo:** relacionar calidad del sueño con la adicción a internet en estudiantes universitarios en Ñuble, Chile. **Material y métodos:** cuantitativa, correlacional, utilizando dos cuestionarios validados: el Internet Addiction Test y el índice de calidad de sueño de Pittsburgh. El muestreo es de 230 alumnos de una universidad privada. Los datos obtenidos se analizan mediante el *software* Jamovi para la prueba de normalidad y el coeficiente de correlación de Spearman. **Resultados:** los datos revelan la presencia mayoritaria de población femenina, entre 20 y 25 años, en la carrera de enfermería. La relación entre la calidad del sueño y la adicción a internet es estadísticamente significativa y evidencia una correlación positiva débil. Este patrón se repite para la calidad de sueño subjetiva y la duración del mismo. Sin embargo, las alteraciones de este no muestran una relación significativa. **Conclusión:** se confirma una relación débil entre calidad del sueño y adicción a internet en estudiantes universitarios de Ñuble. Los resultados detallados subrayan la importancia de abordar la salud del sueño en el contexto de la adicción a internet, resaltando la necesidad de medidas preventivas y de intervención que contribuyan de manera significativa a mejorar el bienestar y la calidad de vida.

Palabras clave (DeCS)

Adicción a internet; calidad del sueño; salud del estudiante; redes sociales en línea; descanso.

Qualidade do sono relacionada ao vício na internet em estudantes universitários em Ñuble, Chile, 2023

Resumo

Introdução: a internet transformou o cotidiano dos jovens, facilitando sua educação virtual e sua comunicação com o mundo. Entretanto, nos últimos anos, houve aumento preocupante do vício na internet, caracterizado por dependência excessiva e comportamentos problemáticos, que podem afetar a qualidade do sono, essencial para a vida humana. **Objetivo:** relacionar a qualidade do sono com a dependência da internet em estudantes universitários de Ñuble, Chile. **Material e métodos:** quantitativo, correlacional, usando dois questionários validados: o Internet Addiction Test e o Pittsburgh Sleep Quality Index. A amostra consistiu em 230 alunos de uma universidade particular. Os dados obtidos foram analisados por meio do software Jamovi para o teste de normalidade e do coeficiente de correlação de Spearman. **Resultados:** os dados revelam a presença de uma população predominantemente feminina, entre 20 e 25 anos de idade, no curso de enfermagem. A relação entre a qualidade do sono e o vício na internet é estatisticamente significativa e mostra correlação positiva fraca. Esse padrão se repete para a qualidade subjetiva do sono e para a duração do sono. Entretanto, os distúrbios do sono não apresentam relação significativa. **Conclusão:** foi confirmada relação fraca entre a qualidade do sono e a dependência da internet em estudantes universitários de Ñuble. Os resultados detalhados ressaltam a importância de abordar a saúde do sono no contexto da dependência da internet, destacando a necessidade de medidas preventivas e de intervenção que contribuam significativamente para melhorar o bem-estar e a qualidade de vida.

Palavras-chave (Fonte DeCS)
Vício na internet; qualidade do sono; saúde do estudante; redes sociais on-line; descanso.

Introduction

The term 'sleep,' usually associated with the act of resting or the desire to do so, can be described as the physiological and cyclical state that is part of the circadian rhythm between sleep and wakefulness (1). It is known that during this state a progressive and repetitive reversible decrease in consciousness occurs, accompanied by a reduction in perception and response capacity (1, 2). Sleep is influenced by four different aspects: The circadian rhythm, which refers to the time of day it occurs; the internal elements of the body, such as age and sleep patterns; the actions the individual takes to promote or restrict sleep, and, finally, the environment in which you sleep (3).

On the other hand, the term 'quality of sleep' is understood as good sleep and adequate rest during the night along with optimal daytime functioning (4), that is, an optimal level of concentration and attention when performing different types of tasks during the day. The relevance of having quality sleep is not only essential for health but also to promote a good quality of life (5).

The Internet, evidently, has become a tool that has impacted people's lives due to its ability to facilitate recreational, academic, work, and social activities (6). This network is the most used to communicate, inform, entertain, and relate to users (7). It has been specified that the impact of the Internet has brought positive consequences for the advancement of virtual education, as it facilitates telecommunications and access to information updated in real time, among other qualities (8). But with the rise in access to digital platforms, unfavorable effects also arose as a consequence of inappropriate use of the Internet (9). Several studies mention the term "Internet addiction" (IA), which was introduced a few decades ago by the well-known psychiatrist Iván Goldberg (6, 7, 10).

This phenomenon can be defined as a behavior characterized by developing dependence on the state of excitement generated by excessive browsing on the Internet platform, generating an inability to disconnect from the web, and loss of limits regarding its use (11). This behavior causes problematic behaviors in the performance of various daily activities, in addition to symptomatological consequences that generate significant discomfort on the person (12). However, this disorder is not included in the current version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), due to a lack of consensus in the delimitation of the criteria for the diagnosis and treatment of this non-chemical addiction, despite the empirical evidence which supports the existence of behavioral addictions (13). To remedy the aforementioned limitation, the scientific community points out that IA, as a psychological disorder, is characterized by its lack of control in its use, abuse, compulsive use, and abstinence (14). In the same way, they have been in charge of creating various scales to measure IA, highlighting the Kimberly Young addiction test (15).

One of the most used instruments to measure Internet dependence is the Internet Addiction Test (IAT), which has been translated into several languages (7, 10, 16). To fully understand what this instrument measures, it is necessary to clarify some concepts: 1) Emotional needs, that is, the dependence on the Internet to receive affection and satisfaction of needs, which generates a preference for online navigation over real situations (16, 17); 2) Loss of control, refers to the inability that the user experiences to manage the time allocated to the use of online platforms, triggering carelessness regarding the important duties of daily life (17).

On the other hand, various investigations have been conducted on sleep quality, with the Pittsburgh Sleep Quality Index (ICSPS) being one that presents great versatility. This questionnaire was developed by the Department of Psychiatry at the University of Pittsburgh, Pennsylvania, in 1988 (18). Likewise, this index has been used in research in different countries such as: Spain, where it was applied to 275 workers in the health area, aged between 18 and 65 years and it showed that 65.8% of the workers in this area have poor sleep quality (19). In Peru, a study was conducted where the questionnaire was applied to 211 medical students between 18 and 28 years old and it was shown that 68.7% of those evaluated have poor sleep quality (20).

To achieve a better understanding of this research, it is necessary to clarify some concepts of the questionnaire, for example: Subjective sleep quality, refers to how the person perceives the quality of their rest; sleep latency refers to the amount of time it takes for the person to fall asleep; sleep duration, total number of hours that the person manages to sleep during the night; sleep efficiency, time spent asleep compared to time spent lying down (21); sleep disturbances, presence of disorders such as: insomnia, sleep apnea, hypersomnia, or bruxism, among others; use of sleeping medications, refers to the intake of hypnotic medications, prescribed or not, to be able to fall asleep and reduce brain activity; and, finally, daytime dysfunction, which refers to the feeling of drowsiness during the day and the difficulties that this generates in daily life (22).

Due to the reasons presented, the aim of this study is to analyze the effect of the Internet on the lives of young university students, as this population is the most prone to developing patterns of inappropriate behavior or abuse, which affect their quality of sleep. The purpose of this research is to relate the lack of quality of sleep with IA in university students in Ñuble, Chile.

Materials and Methodology

For this study, a quantitative, descriptive, non-experimental correlational paradigm was used. Through non-probabilistic sampling, for convenience, a sample of 230 university students

in the health field, belonging to a private university from the region of Ñuble, Chile, was selected. Third and fourth year students from Nursing, Nutrition and Dietetics, Obstetrics and Childcare, Occupational Therapy and Psychology, who had electronic devices with Internet connection, were included. Regarding the exclusion criteria, two were applied: Students diagnosed or being treated for a mental health pathology and students who did not complete the survey in its entirety.

Two instruments validated in the international and Chilean context were used to collect the information. Firstly, to determine Internet addiction, the IAT was used, with 10 questions on a 6-point Likert scale (from 0 = not applicable, to 5 = always). This questionnaire has two dimensions: Emotional Need and Loss of Control (23), and was validated, in the Latin American context, in a population of 500 people, finding a reliability of between 0.89 and 0.94 (24). In Chile, a cross-cultural adaptation and factor analysis was conducted in a population of 425 participants, with a Cronbach's α of 0.85 (25).

The second questionnaire, the ICSPS, consists of nine questions to determine whether sleep quality is good or bad; this instrument has seven dimensions: Subjective Sleep Quality, Sleep Latency, Sleep Duration, Habitual Sleep Efficiency, Sleep Disturbance, Use of Sleep Medications, and Daytime Dysfunction (26). It was validated in Chile with a Cronbach's α of 0.92 (27), and in Mexico, where it yielded a Cronbach's α of 0.79 (28).

Data was collected using the Google Forms application using a QR code. Subsequently, the data obtained were analyzed with the Jamovi program, using Spearman's correlation coefficient and Chi-square as statistical tests. To preserve ethical principles, this study obtained approval from the Scientific Ethics Committee of the university investigated under dictum 2023-87. It is important to highlight the anonymity, privacy and confidentiality of the information was assured following the principles established in the Declaration of Helsinki.

Investigating Internet addiction and sleep quality in university students is crucial, due to the increasing dependence on technology in this population. Internet addiction can negatively impact mental and physical health, including sleep quality, which in turn impacts academic performance and overall well-being. Understanding this relationship will allow the development of policies and intervention programs that promote healthy use of the Internet, to improve sleep hygiene among students, thus contributing to their academic success and comprehensive well-being.

Results

The sociodemographic data presented in Table 1 shows that, of the total population surveyed, 81.3% are female and the age range is mostly between 20 and 25 years, with 88.7%. On the other hand,

the majority of respondents belong to the Nursing program, with 38.7%, where 58.3% are in their fourth year.

Table 1. Sociodemographic Data from the Population of University Students

Gender prevalence			
Gender	**Prevalence**	**% of total**	**% accumulated**
Femenine	187	81.3	81.3
Masculine	43	18.7	100
Career Prevalence			
Nursing	89	38,7	38.7
Obstetrics	27	11,7	50.4
Nutrition	33	14,3	64.8
Occupational Therapy	21	9,1	73.9
Psychology	60	26,1	100.0
Grade Prevalence			
Third Year	96	41,7	41.7
Fourth Year	134	58,3	100.0
Age Prevalence			
15-19	1	0,4	0.4
20-25	204	88,7	89.1
26-30	20	8,7	97.8
31-35	5	2,2	100.0

Source: Prepared by the authors.

Regarding Internet addiction, and according to their gender, it is observed that 52.2% of women and 11.3% of men have a mild addiction, while only 1.7% of women have a severe addiction. Regarding the academic year, 26.1% of third-year students and 37.4% of fourth-year students show mild addiction, and both courses represent 0.9% of severe addiction. In terms of majors, severe addiction is found in 1.3% of nursing students and 0.4% of psychology students, with no impact on other majors.

Considering the classification of sleep quality, according to gender, it is highlighted that 10% of women and 2.6% of men have serious sleep problems. Additionally, most women (52.6%) need care and treatment to improve their sleep. In relation to the academic year, 8.7% of fourth-year students and 3.9% of third-year students were found to have severe sleep problems. Regarding the program of the participants, it was evident that 4.8% of the Nursing students, 1.7% of the Obstetrics students, 2.2% of the Nutrition students, 0.4% of the in Occupational Therapy and 3.5% of those in Psychology have severe sleep problems.

Regarding the correlation between Internet addiction and sleep quality, the data presented in Table 2 represent the connection of total sleep quality with Internet addiction (r=0.154 p=0.01), demonstrating that there is a correspondence weak positive between both variables.

Table 2. Relationship between Sleep Quality and Internet Addiction in University Students

Sleep Quality		
Internet Addiction	**Spearman's Rho**	0,154
	gl	228
	P Value	0,019

Source: Prepared by the authors.

The data presented in Table 3 represent the relationship between subjective sleep quality and Internet addiction. The coincidence between these two variables is statistically significant (r=0.250 p=0.00) but weak.

Table 3. Relationship between Subjective Sleep Quality and Internet Addiction in University Students

Subjective Sleep Quality		
Internet Addiction	**Spearman's Rho**	**0.250*** **
	gl	228
	P Value	< .001

* p < .05 ** p < .01 *** p < .001

Source: Prepared by the authors.

The data presented in Table 4 represent the relationship between sleep duration and Internet addiction. The proximity between these two variables is statistically significant (r=0.149 p=0.02).

Table 4. Relationship between Sleep Duration and Internet Addiction in University Students

Sleep Duration		
Internet Addiction	**Spearman's Rho**	**0,149***
	gl	228
	P Value	0,024

* p < ,05 ** p < ,01 *** p < ,001

Source: Prepared by the authors.

The data presented in Table 5 represents the sleep disturbances with an Internet addiction. The relationship between these two variables is not statistically significant (p= 0.12), which shows that they are significantly independent.

Table 5. Relationship between Sleep Disturbances and Internet Addiction in University Students

Sleep Disturbance		
Internet Addiction	**Spearman's Rho**	**0.102**
	gl	228
	P Value	0.122

* p < .05 ** p < .01 *** p < .001

Source: Prepared by the authors.

The data presented in Table 6 represents the relationship between daytime dysfunction and Internet addiction. The relationship between these two variables is statistically significant (r=0.245 p=0.00).

Table 6. Relationship between Daytime Dysfunction and Internet Addiction in University Students

Daytime Dysfunction		
Internet Addiction	**Spearman's Rho**	**0.245*** **
	gl	228
	Valor p	< .001

*** p < .**05 ** p < .01, *** p < .001

Source: Prepared by the authors.

Finally, the relationship between Internet addiction and hours of sleep (sleep efficiency dimension) is a weak, negative correlation (p=0.004, Rho =-0.188). Moreover, the Chi-square test was applied to determine the association between Internet addiction with sleep latency (p=0.90) and medication use (p=0.52), where no statistically significant differences were found.

Discussion

The most relevant findings from this research come from the relationship between sleep quality and Internet addiction in university students. The dimensions that relate the variables of the study to respond to the objective of the research are highlighted. In accordance with the results found in Table 1, regarding the description of the sociodemographic aspects, the large number of female population stands out, 81.3%, and young adults, 88.7%, who belong to the student community of this research agree with what was found in the studies by Martínez (29) and Cecilia (30), who sought to quantify the university population to investigate psychological phenomena. These authors mentioned that, when accounting for university students in the health area, the sample with the greatest representation is that of women between 19 and 21 years old, represented in the first study with 55.2% of the students and the second study with 75.82%.

On the other hand, according to the results obtained in Table 2, concerning sleep quality and Internet addiction, it was demonstrated that there is a statistically significant correspondence between both variables. This finding is corroborated by what was stated in an analytical study conducted at a university community by the author Iñiguez (31), where sufficient empirical evidence was found to conclude that there is a statistically relevant relationship between sleep quality and problematic Internet use. In their study, 51% of participants had problems with Internet use and, at the same time, sleep problems. In turn, Wang's study (32) mentions that problematic Internet use is related to poor sleep quality, since students who spend more time online, 23.5% of the time, tend to not fall asleep, which negatively impacts their level of rest, generating psychological discomfort.

Additionally, regarding the results of Table 3, the relationship between subjective sleep quality and Internet addiction is understood and shown to be statistically significant, a fact that coincides with what was established by Gutiérrez (33) in his research on a population student, in which the association between the appreciation of the nature of sleep and academic performance is influenced by the amount of time the Internet is used. Similarly, the study by Alimoradi (34) reveals solid evidence supporting that excessive Internet use has a relevant and negative impact on the perception of the degree of sleep of students, reporting that 52% of them have a problematic use of the Internet and are more likely to suffer from sleep disorders.

Regarding the results presented in Table 4, which represent the relationship between sleep duration and Internet addiction, it is observed that both variables are statistically significant. This can be corroborated with the study by Fajardo and Collante (35), which indicates that 15% of the students evaluated have very poor quality of rest, a fact that generates intrapersonal conflicts or problems in daily tasks. According to the study by Chui (36), conducted among the university population, there is a statistically significant relationship between the variables studied; Internet addiction is an unfavorable predictor for overall rest time, with a moderate correlation.

Moreover, the data presented in Table 5 represents the relationship between sleep disturbance and Internet addiction, demonstrating they are independent variables, but with a weak positive correlation between both. The study by Fajardo and Collante (35) does not agree with what was found in this research, since it mentions that there is a statistically significant connection since there is evidence that explains that, when faced with a dependence on the Internet, sleep disturbances can be generated that end up aggravating the quality of the latter. As in the study by Fajardo and Collante (35), the study from Echeverria (37) states that in the population studied, 51.7% presented a serious level of sleep disturbances, which leads to the understanding that this variable is negatively altered by different environmental factors, one of these being the use of electronic devices.

Finally, Table 6 shows the results that represent the relationship between daytime dysfunction and Internet addiction. This association is statistically significant and indicates that there is a weak positive correlation between the variables, which can be verified in the study by Ochoa (38), conducted on students. This research shows that excessive use of the mobile phone affects the student's daily activities, as fatigue and daytime sleepiness occur. On the other hand, Celis (39) mentions that using the Internet before sleep has a significant effect, as it causes excessive daytime sleepiness.

Conclusions

This research led to the conclusion that there is a weak positive relationship between sleep quality and Internet addiction in university students from Ñuble. In the statistical analysis, a Rho value of 0.15 was found, and the significance found was 0.01, with respect to the theoretical significance, which is 0.05.

It is specified that, according to the sociodemographic data of the student population in the health area, it is composed mainly of young adults belonging to nursing studies, with a predominance of the female gender.

It was determined that there is a weak positive relationship between subjective sleep quality and Internet addiction in the students of this research: the statistical test showed a Rho value of 0.25, with a significance of 0.00 less than the significance theoretical, which is 0.05.

It was established there is a relationship between the duration of rest and Internet addiction in the population studied: the statistical test applied showed a Rho value of 0.14, which shows there is a weak positive relationship with a significance of 0. 02, being less than the theoretical significance of 0.05.

It was determined there is no connection between sleep disturbances and Internet addiction in the group of people studied. The statistical test revealed a Rho value of 0.10, indicating a weak positive relationship. The significance found was 0.12, which is greater than the theoretical significance of 0.05.

It was concluded there is a relationship between daytime dysfunction and Internet addiction in the sample studied. Statistical analysis indicated a Rho correlation coefficient of 0.24, indicating a weak positive correlation. Furthermore, the significance level was found to be 0.00, lower than the theoretical threshold of 0.05.

Research on the relationship between sleep and Internet addiction in university students has great value for practical application in the disciplines of nursing and psychology. It allows the

development of intervention strategies and support programs that address mental and physical health problems derived from excessive Internet use, improving the quality of sleep and, consequently, the general well-being and academic performance of students. This research also provides nursing and psychological professionals with fundamental data to design preventive and therapeutic approaches specific to this population, promoting healthy habits and an appropriate balance between the use of technology and rest.

Limitations

- Examine correlation coefficients or other measures to determine the magnitude or direction of the relationship.
- Little number of studies related to the two variables.
- Participants may have little objectivity about their own Internet addiction and its influence on sleep quality.
- The IAT instrument measures the extent of an individual's involvement with the computer.

Recommendations

- Expand the study to other universities in the area.
- Apply this study to a different sociodemographic group.
- Conduct a longitudinal study to examine how variables change over time.

Conflict of interest

There is no conflict of interest between the authors of this manuscript.

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