Correlation between sexting behaviors and mobile phone dependency in nursing students
Correlación entre conductas sobre Sexting y dependencia al móvil en estudiantes de enfermería

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ABSTRACT:

Introduction. Sexting is defined as the sending of erotic or pornographic content through digital devices; It's a term of daily use whose practice may bring positive effects, and on the other hand risks for sexual and mental health as shown in different studies. Regarding mobile dependency, this practice has increased in university students, who need to create, share, and download content. Both phenomena have factors in common that may signify an unexplored relationship.

Objective. To determine the correlation between sexting behaviors mobile phone dependency in nursing college students.

Methodology. This is an observational, cross-sectional, and correlational study, with a non-probabilistic convenience sampling method that included undergraduate nursing students at a public university in Mexico, the Pearson and Spearman correlation was used on the results of the totals and components of the instruments: behaviors on sexting and Mobile Dependency Test.

Results. With 300 participants, it is reported that 64.7% declare having participated in sexting through text messages, sharing images, among other forms of participation; On the other hand, in terms of mobile phone dependency, 96.3% were in a medium and high dependency. When comparing the final summations of each instrument, a positive correlation is obtained with r.=0.166, p<0.050.

Conclusion. A positive correlation between sexting and mobile phone dependency is the first indicator to explore in-depth the common factors that predispose and that can derive from both phenomena in the young population.

Key Words: Sexting behaviors, mobile phone dependence, social media, correlation, nursing students.
RESUMEN:

Introducción. El sexting se define como el envío de contenido erótico o pornográfico a través de dispositivos digitales; es un término de uso cotidiano, cuya práctica puede traer efectos positivos, y por otro lado riesgos para la salud sexual y mental en quienes lo practican. En lo que respecta a la dependencia al móvil, esta práctica se ha incrementado en estudiantes universitarios, quienes tienen la necesidad de crear, compartir y descargar contenidos. Ambos fenómenos tienen factores en común que pueden significar una relación no explorada.

Objetivo. Determinar la correlación entre las conductas sobre el sexting y la dependencia al móvil en estudiantes de enfermería.

Metodología. Estudio observacional, transversal y correlacional, con muestreo no probabilístico a conveniencia que incluyó estudiantes del grado en enfermería en una universidad pública de México, se utilizó la correlación de Pearson y Spearman sobre los resultados de los totales y componentes de los instrumentos: conductas sobre sexting y Test de Dependencia al móvil.

Resultados. Con 300 participantes, se reporta que el 64.7% declara haber participado en el sexting a través de mensajes de texto, compartir imágenes, entre otras formas de participación; por otro lado, en cuanto a la dependencia al móvil el 96.3% se encontraba en una dependencia media y alta. Al comparar las sumatorias finales de cada instrumento se obtiene una correlación positiva con r.=0.166, p<0.050.

Conclusión. Una correlación positiva entre el sexting y la dependencia al móvil es un primer indicador para explorar a profundidad los factores en común que predisponen y que pueden derivar de ambos fenómenos en la población joven.

Palabras clave: Sexting, Dependencia al móvil, redes sociales, estudiantes de enfermería

INTRODUCTION

Technology and social networks have changed the way people communicate and subsequently relate. These last ones are defined as virtual communities or internet platforms that bring together people who relate to each other through messages, images, videos, and other archives in various formats (1).

Some authors even consider that the study of these relationships, immersed in the world of digital communication, are part of a subsection of study, known as "psychotechnology", since they have modified fundamental aspects of the ways in which the members interact (2).

Nowadays, it is known that the smartphone is the preferred device for managing social media. In Mexico, the National Survey on the Availability and Use of Information Technologies in Households (ENDUTIH, for the Spanish acronym) reported that the use of smartphones had an exponential increase in recent years, it states that 93.4% of the population used this device. Likewise, the survey refers that the three main activities realized were: entertainment (90.5%), communication (90.3%) and information search (86.9%). It is also noteworthy that the main user group are women between 25 and 34 years old (3).

Sexting Behaviors

Sexting is defined as the sending of digital erotic content through different electronic devices. Diverse authors states that approximately at least 50% of young adults have performed this practice (4).

Studies suggest that this behavior is practiced primarily to start or maintain an intimate relationship, and others, support from a risk perspective the sexting with complex and negative consequences. For the study of these factors, various authors propose a
categorization according to the element in the chain of communication, such as the type of content (format in which it is carried out, for example: text, photos, videos), forms of participation (active is when one creates the content and shares it, and passive when it is only forwarded), the platform of transmission, characteristics of the message, among others.

Within these essentials, the evaluation of sexting behaviors provides a evaluation that goes beyond the characterization of the frequency and content of the messages, since it allows to portray the habits (moments and ways of realization), the motivation (elements that encourage and initiate the practice) and the emotional expression (psychological repercussions) that unfold before, during and after the practice. Assessing the sexting conduct can provide a better context on the action and influence of the preventive work of the associated risk; without exercising a moral judgment on it.

**Mobile Dependency**

The World Health Organization establishes the dependence syndrome as the group of physiological, behavioral, and cognitive phenomena in which the use of a substance acquires a much higher priority for a person, causing a loss of interest in other activities, and physical, mental, and social deterioration. Furthermore, the Internet dependence and the addiction to mobile devices has also been identified, seen as a pathological interaction between human and device, resulting in uncontrollable, excessive, and intermittent use of the smartphone.

Mobile dependence can lead to negative effects on interpersonal relationships, physical and mental health, and daily life due to symptoms of tension, dissatisfaction, and loss of interest in other areas of life, anxiety due to separation from the device, generation of distraction in the activities of daily life, academic and professional, isolation, among others; just like it happens with addictions.

In addition, it is known that the use of cell phones is also related to factors such as the used screen time and the number of messages sent, as well as emotional expressions. For example, abstinence and difficulty controlling impulse, can explore aspects related to feelings of the difficulty to stop using the device in the habitual way. Moreover, overuse problems and tolerance can make the social and psychosomatic effects of visible overuse.

These two phenomena find a common point as they are contained in the use of smartphones, relational anxiety in communication, and the excessive use of social networks. Socially, the cultural determinants that can support the symbolic relationship of these events are related with an intense media and technological culture, such as the production of multimedia content to be shared in the social environment for young adults.

Thus, by allowing instant communication, greater portability, and ease of use of the mobile device, it has been observed that users prefer it to maintain sexting relationships, especially among adolescents and young adults.

Previous studies reported that college students are a group that spends an average of at least five hours a day on their phone, mainly involved in leisure activities, interacting...
with their partner and/or social group. Additionally, college nursing students’ articles describe that they are highly dependent on cell phones with (up to 16% of high dependence), which can have negative consequences for them during their training classes, and for the patients they care for during their professional practices\textsuperscript{(15)}.

Due to the constant physical and social isolation that is caused by the combination of internships and classes, nursing students can become extremely attached to their smartphones to feel constant connection with their partner, circle of friends, and support nets. This, added to the intense load of emotional and psychological stress can generate a constant need to unload the problems and feelings encountered in professional work, which can increase the use of cell phones to maintain emotional, affective, and even sexual relationships\textsuperscript{(16)}.

It is important to mention that, up until now, the relationship between these variables has not been explored, especially from the motivations, conducts, and habits to be able to successfully influence the reduction of risk and allow enjoying the benefits of relationships in the digital platforms, so to sum up, the objective of this study is to analyze the relationship between sexting behaviors and mobile phone dependency in nursing college students.

**METHODOLOGY**

This is a quantitative, observational and cross-section study with a correlational reach; carried out with college nursing students from a public university in Mexico. The subjects were selected through a non-probabilistic convenience sampling in which the participants had to be at least 18 years old, have a smartphone with internet access, and be regularly enrolled in the nursing academic program. This study was conducted from August to December of 2021. The characteristics of the two instruments applied were:

- **The Sexting Behavior Scale (SBS), of 28 items on a Likert scale with five response options, (from completely agree to completely disagree), allows evaluation the components of disposition towards sexting, real participation in sexting, and emotional expression during sexting.** The sum of each one of the items allows knowing the intensity of sexting participation, categorized as very low (0 to 27 pts.), low (28 to 55 pts.), medium (56 to 83 pts.), high (84 to 111 pts.) and very high (112-135 pts.). This test has been validated on Mexican population by Chacon in 2016, getting a total of 0.92 on the Cronbach’s Alpha value\textsuperscript{(17)}.

- **The test for mobile dependency (TMD) to obtain the degree of dependency in which the students are.** The arithmetic mean was obtained and stratified according to the value obtained in each of the four components (abstinence, abuse and difficulty controlling impulse, problems due to excessive use and tolerance), as well as the total score which can be categorized in low (0 to 36 pts.), medium (37 to 73 pts.) and high (74 to 110 pts.). This test has been applied to different research, such as Dorantes in 2020, who obtain a total of 0.92 on the Cronbach’s Alfa test on Mexican college students\textsuperscript{(18)}.

This research was approved by the Ethics and Research Committee of the university school where it was carried out, no direct or indirect risks derived from this research
were identified, the confidentiality was always kept, and informed consent form was obtained from each of the participants.

Finally, after retrieving the answered instruments, the IBM SPSS V.21 program was used for the normality distribution test and correlational calculations (Pearson’s correlation coefficient). The tabulation of the data was carried out with the Microsoft Excel 2019 program, and for the descriptive statistics.

RESULTS

Demographics

Of the 300 participants, it was established that 25.7% (77) were men, and 74.3% (223) were women. The mean of the age was 20.79 with an (Standard Deviation) SD of 1.9. Secondly, 53.7% (161) were fourth-year students, 30% (90) were first-year students, and 15.7% (47) were second-year students. Regarding the age of beginning sexual intercourse, the participants reported that 78% (234) had begun on average at 17.56 years (2.02 SD); with a minimum of 12 years old and a maximum of 23; overall, men had started their sexual life in 81.8% (63) with an average of debut of 16.5 years (2.08 SD) and women in 76.6% (171) with 17.83 years (2.28 SD). In their current relationship status, they reported that 49.3% (148) had a partner at the time of the survey.

Sexting Behaviors Scale

After obtaining the reliability statistic in the 300 participants (Cronbach's Alpha= 0.99), the participants declared on a 64.7% (194) to have done sexting, of which 70.12% were men and 60.98% were women. Then, 92.26% (179) of the participants stated that they received text messages with sexual content, and 81.95% (159) stated that they responded in the same way.

Secondly, when in the evaluation of the frequency of multimedia content, it was determined that 90.72% (176) received images or videos with sexual content, and 75.77% (147) responded with it. Regarding social networks, 75.77% (147) received suggestive provocative images or messages on platforms such as Facebook, Instagram, or Snapchat. Finally, it states that 55.67% (108) sent these messages. Finally, 26.28% (51) stated that they had posted suggestive or provocative images on public platforms such as Facebook, Instagram, Tumblr, or Snapchat.

Regarding the habits when performing sexting, 63.91% (124) of the participants declared that they did it with their partner, and 29.89% (58) reported that they did it with someone who attracts them, 15.97% (31) reported doing it when they want to start dating someone and 47.93% (93) reported starting sexting when they intend to have sex. Meanwhile, when asked if they sext with friends, 14.94% (29) stated that they do. Lastly, it was found that 9.79% (19) engage in sexting when partying with friends; 13.91% (27) reported that they sext when they drink alcohol, and 3.60% (7) when they are smoking marijuana or other substances.

Finally, In the emotional expression during sexting, in the first question (does sexting make you more likely to have sex or go out with someone?), the participants answered
affirmatively in 49.48% (96). Furthermore, 43.81% (85) reported that it is false that sexting makes them feel immoral, 57.74% (112) declared feeling ashamed and 48.96% (95) reported feeling happy while doing it. Through the scale, it was identified that 68.86% (122) of the students perform sexting in a low intensity, while, in a medium and high intensity, a total of 35.05% (68) and 1.03% (2) are reported, respectively. When categorized according to gender, men have an average of 37.74 and women 31.90 pts, which places both in the low intensity level. The general levels of each component can be seen in graphic 1.

**Graphic 1. Distribution of the scores by component of the Sexting Behaviors Scale**

![Graphic showing distribution of scores by component of the Sexting Behaviors Scale](image)

**Mobile Dependency**

The instrument had a reliability, obtained with the Cronbach's Alpha statistic of 0.92, in the 300 subjects. In the mobile abstinence section, five questions are considered, where the emotional state is questioned in different situations related to the loss of the cell phone. In this category, stands out that 67.66% (203) agreed to feel bad when they do not have their cell phone, 69.66% (209) said they could not spend a week without their cell phone, and finally 86.33% (259) expressed that he or she may use his or her smartphone during this questionnaire.

In the next component, abuse and difficulty controlling the impulse, the first question asks the subjects if someone has called them dependent on the cell phone, for which 84.33% (253) answered affirmatively. When asking the students if they have sent more than 5 messages in a day, 98% (294) responded affirmatively and 94.3% (283) admitted that they sleep late or slept less because they are using the cell phone.

Thirdly, on the problems experienced by the subjects due to excessive cell phone use were evaluated. The questions asked, for example, if the subject has set limits on the use of his or her mobile and has not complied with it, for which the subjects answered 82% (246) that they agree. Another the questions in this section questions whether
people spent more money than they expected on their cell phones, to which 76.3% (229) responded affirmatively.

In the last component, tolerance, behaviors related to the feeling of needing to use the cell phone more frequently were evaluated. The questions about the feeling of using your cell phone more and more, where 65% (195) agreed with that feeling, also 71% (213) stated that they spend more money now than when they received their cell phone.

Finally, when adding the questions and obtaining the level of dependence on the mobile, it is established that the participants have a mean of 63.9 with a 17.1 SD, in general. Regarding the general categorization, 74% (222) were in a medium dependency, 3.7% (11) were in a low dependency, and 22.3% (67) in a high dependency. For the averages by each component, it is observed that abstinence has a mean of 2.82 pts, abuse and difficulty controlling impulse 3.2 pts, problems due to excessive use 2.3 pts, and tolerance 2.5 pts. Graphic 2 shows the distribution of the data by component.

Graph 2. Distribution of the scores by component of the Mobile Dependency instrument

Correlation between behaviors on sexting and mobile dependence

The correlation test between the components and general levels of behaviors on sexting and mobile dependence (Pearson’s correlation coefficient) was determined in a range between .149 and .167 and correspond to the dyad abstinence-real participation and abstinence-emotional expression as visualized in table 1. Finally, in the main variables (intensity of participation in sexting and level of dependence on mobile phones) show a positive and directly proportional value is obtained with \( r^2 = 2.7\% \).
Table 1. Correlation with Pearson’s P Coefficient on the components of each instrument.

<table>
<thead>
<tr>
<th>Mobil Dependence Test</th>
<th>Disposition</th>
<th>Real participation</th>
<th>Expression during sexting</th>
<th>Total Score SBS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstinence</td>
<td>.100</td>
<td>.167*</td>
<td>.020</td>
<td>.177*</td>
</tr>
<tr>
<td>Abuse and difficulty controlling impulse</td>
<td>.123</td>
<td>.088</td>
<td>.113</td>
<td>.149*</td>
</tr>
<tr>
<td>Problems due to excessive use</td>
<td>.084</td>
<td>.048</td>
<td>.503</td>
<td>.131</td>
</tr>
<tr>
<td>Tolerance</td>
<td>.096</td>
<td>.183</td>
<td>.101</td>
<td>.127</td>
</tr>
<tr>
<td>Total Score TMD</td>
<td>.120</td>
<td>.097</td>
<td>.070</td>
<td>.166*</td>
</tr>
</tbody>
</table>

Notes: *Significant Correlation

**DISCUSSION**

This paper establishes the common components of both phenomena, as well as emphasizing the negative repercussions that they can have, that is, knowing the behaviors and habits of sexting and characterizing their relationship with mobile dependence allows establishing effective recommendations on these behaviors and contributes to preventing the negative events associated with these events.

According to the objectives of this research, the descriptive data related to the population and the characterization of sexting were established. The results indicates that 64.7% declared that they engaged in sexting, which indicates a similar prevalence to the study by Gutiérrez in 2017, who determined that the prevalence of participation was 63% of the total population, with a higher prevalence in women\(^{(18)}\).

Similarly, carried out an investigation with 276 psychology students evaluating the smartphone dependence with the same instrument and determined that the mean average in the abuse and difficulty in controlling impulse component was 1.8, which places him just at the medium level of dependence on mobile phones in contrast to what is reported in this investigation where the mean score was 3.2, two points right before the high level. Furthermore, in the abuse component, Sánchez reported a mean average of 4.2, compared to the average of 2.82 that was determined in this investigation. These differences may significate that the subjects have fewer strategies to control the impulse to interact through the mobile phone, which increases the abuse\(^{(19)}\).

Evidence illustrates that in the evaluation of the overall scores on mobile dependency, the students in this study present high percentages, especially for the medium and high levels. In 2017, Paredes and Ríos determined in nursing students for the abstinence section they presented a moderate level of dependence (41.4%), and high (19.4%), while in this research it was determined that the average level of abstinence was 60.4% and a high of 25.6%, which establishes that nursing students tend to show...
greater discomfort when they cannot have a cell phone or when they cannot interact with it correctly\(^{(20)}\).

In 2019, González and his colleagues identified the psychological factors associated with the practice of sexting and it was found that most young people who practice sexting as a couple (especially women) do so because they get asked content for their partners or to show their friends as a practice of group acceptance. This can be explained on the factors identified in the personality test, people who performed sexting tend to present high levels of anxiety, be susceptible to the opinion and influence of their peers and show high levels of impulsiveness in sexting behaviors\(^{(21)}\).

Although there is a weak correlation, we can explain the association with individual traits of personality, which are then expressed in group behaviors. When the variables of mobile dependence are analyzed into sections, the problems to control the impulse and the feeling of abstinence have the highest percentages of correlation with the intensity of sexting \((r^2=2\% \text{ and } 3\%)\) so we can assume that these could function as a mediator in both behaviors, which is supported by the ambivalence of subjects who report feeling shame or another negative emotion during the practice of sexting \((57.14\%)\)\(^{(22)}\).

On the other hand, social or group pressure are important variables to consider both in the correlated factors and with the main variables, since these (enhanced by impulsiveness) manifests itself as an important factor for carrying out behaviors, as well as the low perception of the associated risks\(^{(23)}\).

**Limitations and recommendations**

By being a cross-sectional study, lacking temporality, causal relationships cannot be established. Therefore, it is suggested to use a statistical sampling method that considers a greater number of participants to increase statistical power and characterize other college populations.

**CONCLUSION**

It is important to interpret this information carefully since there are different perspectives when studying sexting, both as deviant behavior that can favor risky practices such as having unprotected sex and lack of consent and on the other hand as normal behavior, especially in couples who relate through digital devices in which benefits have even been reported, such as increased confidence in one’s own body, intimacy with a partner, and satisfaction when having sexual relations. Despite having a statistically significant correlation, it is suggested to explore through qualitative and in-depth studies the relationship between the mediators of both phenomena, as well as the common motivations that these two practices may have.

Secondly, it is important to emphasize that in this research a high level was found, compared to other studies, of mobile dependence meaning that campaigns and strategies to promote responsible and non-problematic use of these devices are an area of opportunity on campaigns to improve the well-being of college students since mobile phone addiction can affect various aspects of them.
In conclusion, by understanding the motivations for the use of mobile devices, the characterization of the prevalence of participation in sexting, and the related emotional expression through social networks, we can establish that far from prohibiting and giving a negative value to relationships, it is recommended to use campaigns positive sexuality to prevent negative effects. Use horizontal and understanding approaches when carrying out educational campaigns on sexting can bring results for minimizing feelings of guilt and increasing the use of digital tools, image editors, use of VPNs (virtual private networks), choosing the right applications to do it with the partner or with other people, among others; summarizing, it can influence the behaviors of doing it by minimizing risks and enjoying the benefits.

REFERENCES


