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*Scientific articles*

## La asociación entre el sexting y la ciberagresión en adolescentes escolarizados

*The association of sexting and cyber aggression in adolescents  
schooled*

*A associação entre sexting e ciberagressão em adolescentes  
escolarizados*

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## Resumen

A pesar de todas las oportunidades que otorga las tecnologías e internet a través de los espacios virtuales como son las redes sociales, estas fomentan y vehiculizan nuevas formas de conductas que representan en ocasiones el desarrollo de comportamientos de riesgo entre los adolescentes, como el *sexting* y las agresiones cibernéticas. El objetivo de esta investigación fue determinar la asociación entre el uso de *sexting* y la ciberagresión en adolescentes escolarizados. Se trata de un estudio no experimental de tipo cuantitativo, descriptivo y correlacional, realizado en 191 estudiantes de una preparatoria pública a través de un muestreo aleatorio simple. Se utilizó una ficha de datos sociodemográficos y dos instrumentos de medición: escala de comportamientos de *sexting* en adolescentes y la escala de ciberagresión. De la muestra, más de la mitad corresponde al sexo femenino. Los adolescentes en promedio obtuvieron 12.6 puntos en la escala de *sexting*, mientras que en la escala de la ciberagresión obtuvieron 10.3 puntos. Además, se obtuvo una relación positiva y significativa del *sexting* y la ciberagresión ( $r_s=.423$ ,  $p=.001$ ). Es necesario que los profesionales de la salud y de área afines trabajen de manera coordinada en la identificación de estos factores de riesgo, así como también diseñen programas preventivos que impliquen la prevención de estas conductas y fortalezcan el manejo de la ciberseguridad en los espacios virtuales donde interactúan los adolescentes.

**Palabras claves:** *Sexting*, Ciberagresión, internet, Adolescente.

## Abstract

Despite all the opportunities provided by technologies and the internet through virtual spaces such as social networks, they encourage and convey new forms of behavior that sometimes represent the development of risk behaviors among adolescents such as sexting and cyber aggression. The objective was to determine the association between the use of sexting and cyberaggression in school adolescents. Non-experimental quantitative descriptive correlational study, conducted in 191 students of a public high school through simple random sampling. A sociodemographic data sheet and two measurement instruments were used: the adolescent sexting behavior scale and the cyberaggression scale. More than half of the sample was female. On average, the adolescents scored 12.6 points on the sexting scale, while on the

cyberaggression scale they scored 10.3 points. In addition, a positive and significant relationship was obtained between sexting and cyberaggression ( $r_s=.423$ ,  $p=.001$ ). It is necessary that health professionals and other professionals work in a coordinated manner in the identification of these risk factors, as well as designing preventive programs that involve the prevention of these behaviors and strengthen the management of cybersecurity in virtual spaces where adolescents interact.

**Keywords:** Sexting, Cyberaggression, internet, Adolescent.

## Resumo

Apesar de todas as oportunidades proporcionadas pelas tecnologias e pela internet através de espaços virtuais como as redes sociais, estas incentivam e veiculam novas formas de comportamento que, por vezes, representam o desenvolvimento de comportamentos de risco entre os adolescentes, como o sexting e a ciberagressão. O objetivo foi determinar a associação entre o uso de sexting e a ciberagressão em adolescentes escolares. Realizou-se um estudo correlacional descritivo quantitativo não-experimental com 191 alunos de uma escola secundária pública, através de amostragem aleatória simples. Utilizou-se uma ficha de dados sociodemográficos e dois instrumentos de medida: a escala de comportamentos de sexting na adolescência e a escala de ciberagressão. Mais de metade da amostra era do sexo feminino. Em média, os adolescentes obtiveram 12,6 pontos na escala de sexting e 10,3 pontos na escala de ciberagressão. Além disso, foi encontrada uma relação positiva e significativa entre o sexting e a ciberagressão ( $r_s=.423$ ,  $p=.001$ ). É necessário que os profissionais de saúde e outros profissionais trabalhem de forma coordenada para identificar estes factores de risco, bem como para conceber programas preventivos que envolvam a prevenção destes comportamentos e reforcem a gestão da cibersegurança nos espaços virtuais onde os adolescentes interagem.

**Palavras-chave:** Sexting, Ciberagressão, internet, Adolescente.

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## Introduction

Adolescence has a significant impact on human life, as it is during this period that the individual's personality is formed, and socialization groups and behaviors that may or may not be healthy are established, which can be influenced by intense changes at different levels, both physically, psychologically, emotionally and socially. This last process has been modified in the last decade by the accelerated changes in the Internet and technologies (International Telecommunication Union [ITU], 2019).

Nowadays, the use of technologies and the Internet has been introduced into all areas of life, allowing new forms of communication, as well as obtaining information and developing projects that would be unthinkable in a non-digital context. (Flores-Cueto *et al.* 2020). Despite all the opportunities it offers, virtual spaces (such as social networks) encourage and channel new forms of behavior that sometimes represent the development of risky behaviors among adolescents, such as *sexting* and cyberbullying.

Sexting is one of the practices through which adolescents explore their sexuality by creating and exchanging text messages, videos, images or photos with personal sexual content using new information technologies. (Narváez, 2022). However, it can have negative repercussions (Englander, 2019) when the dissemination of content is without consent and there are associated risks, such as cyberbullying.

In a meta-analysis, which looked at the results of studies conducted in the United States of America, Canada, Europe, Australia, South Africa, and South Korea, the mean prevalence of sending sexual content was 14.8%, receiving it 27.4%, forwarding sexual content without prior consent 12%, and receiving forwarded sexual messages 8.4% (Madigan *et al.* 2018). Ojeda *et al.* (2020) mention that in the Spanish context, the most frequent *sexting behaviors* in school adolescents are receiving (21.2%) and receiving through a third person (28.4%), followed by forwarding sexual content by third parties (9.3%) and sending (8.1%). In the case of Mexico, a study reported that half of high school adolescents have practiced *sexting*, with a starting age of 12 years, highlighting the prevalence of receiving messages on the mobile phone (4.7%), followed by responding to messages (2.4%), receiving images on the mobile phone (2.4%) and responding to images (0.9%), the main reasons for practicing *sexting being* for a moment of “heat” (17.5%), to be intimate with your partner (8.7%) and to be “trendy” (5.9%; Aguilar-Hernández *et al.* 2022).

Although the exchange and viewing of sexual content is increasingly normalized among adolescents (Aguilar-Hernández *et al.* 2022; Ojeda *et al.* 2020), this practice cannot



be considered normative for relationships between adolescents, because many times the sending of sexual images is without prior consent, violating the integrity of the victimized person, generating a cycle of violence and antisocial behavior, such as cyberbullying (Alonso and Romero, 2019).

The Cyberbullying involves an intentional and conscious act to cause harm, injure, attack and maintain control over the victim through virtual spaces, such as Facebook, WhatsApp, Messenger, Instagram, among others (Gómez *et al.* 2019; Navarro-Rodríguez *et al.* 2023). During this behavior, aggressions such as abuse, threats, humiliation or the spreading of rumors, harassment, distribution of personal information with compromising content for the victim are used, where viewers play an important role by sharing and reacting with a *like* to the publications, when they are made on public social networks (Corcoran *et al.* 2015).

In fact, studies conducted with adolescents in Latin America report that the prevalence of cyberbullying is reported between 2.5% and 42.5% (Herrera-López *et al.* 2018). In Spain, a cross-sectional study was conducted in which 13% of adolescents engaged in cyberbullying; the most common cyber behaviors were using a social network account without permission (4.9%) and sending threatening text messages (4.1%).

In Mexico, there are few studies and statistics reported by national surveys. However, the National Institute of Statistics and Geography (INEGI, 2021) indicates that 21% of people over 12 years of age who use the Internet experienced some type of cyberbullying in the last year, highlighting cybervictimization in people aged 12 to 19 years, where 22.2% of men and 29.2% of women have been victims; women were those who had a high prevalence of cyberbullying of a sexual nature (15%).

The national and international literature points out that the practices of the *sexting* and cyberbullying practices can be influenced by sex and age. Regarding *sexting*, women are more likely to send sexual images than men (Ybarra and Mitchell, 2014), or that men participate to a greater extent in sending, receiving and forwarding to third parties (Strassberg, 2014), although no sex differences have been found in sexting prevalence measures (Beckmeyer *et al.* 2019; Campbell and Park, 2014). In addition, it has been observed that sexting rates are reported with greater presence as age increases (middle and late adolescence; Aguilar-Hernández *et al.* 2022). While in cyberbullying, women are more likely to participate, however, men report higher levels than women and other studies have

not found differences by sex, with the maximum peak of cyberbullying being in adolescence (Xiao *et al.* 2024).

The data cited above show that adolescents are exposed to developing unhealthy behaviors, which puts their overall health at risk as well as that of the people around them. In addition, there are few studies involving sexting and cyberbullying in the Mexican context with adolescents from southern Mexico, the vast majority have been carried out in the American and European context, so there are still gaps to be explained. Digital aggression can occur at any time by known or unknown people with whom the victim establishes a relationship of personal content voluntarily or involuntarily, for example, sharing photos, messages and audios, which can be sent to many people in a very short time and anywhere in the world, which implies large-scale damage to the victim. For this reason, the general objective is to determine the association between the use of *sexting* and cyberbullying in school-aged adolescents.

## Hypothesis

More *sexting*, more cyberbullying among school-aged adolescents

## Method

This research was a non-experimental study of a quantitative, descriptive and correlational type (Costa *et al.* 2007). The participants were selected through a simple random sampling (Hernández, 2021) and were estimated through the GPower statistical package version 23, considering the following parameters: power of 90%, effect of .25 and alpha error .05. The sample consisted of 160 participants, however, a non-response rate of 2% was considered, leaving 191 students from a public high school in Ciudad del Carmen, Campeche. Adolescents of both sexes, from various groups and grades, were included.

As measurement instruments, a personal data sheet and sociodemographic characteristics prepared by the authors for the purposes of the research were used.

To measure the variables of interest, the *Sexting Behaviors Scale in Adolescents* (Rodríguez-Castro *et al.* 2021) was used, which evaluates the practice of *sexting* through the sending of erotic-sexual content by mobile phone and social networks. It consists of nine items with a response scale of 1 = never, 2 = almost never, 3 = sometimes, 4 = frequently, and 5 = always. For interpretation, in this scale the values obtained in each statement are



added with a score of 9 to 45, where the higher the score, the greater the *sexting behaviors*; the scale has reported a reliability of .86 and in this research it obtained a value of .92.

Buelga and Pons *Cyberaggression Scale* (2012) was also used. This scale is based on the mobile phone and internet aggression scale, *consisting* of 10 statements related to behaviors involving harassment, persecution, denigration, violation of privacy, social exclusion and identity theft, actions committed by adolescents. With a *liker -type scale* from 1 to 5 (*never, rarely*: between 1 and 2 times; *sometimes*: between 3 and 5 times; *quite a few times*: between 6 and 10 times; and *often*: more than 10 times). To interpret it, the scores obtained are added together and the following cut-off points are established: 10 points (no risk of practicing cyberaggression), 10 to 19 points (moderate cyberaggression), greater than or equal to 20 points (severe cyberaggression). The reported Cronbach 's Alpha reliability coefficient was .88; in this research a value of .78 was obtained.

For the implementation of the research and data collection, the project was first reviewed and approved by the General Directorate of Research and Graduate Studies of the Autonomous University of Carmen FCS/1ERP2023/03. Once approval was obtained, the public educational institution with the largest number of high school students was located and permission was requested from the authorities of the educational institution. Subsequently, a visit to the institution was scheduled to request the list of students enrolled in the August-December 2023 school year. Once the list was obtained, the groups of students were identified and randomly selected using an Excel spreadsheet. The previously identified classrooms were visited to invite the selected students, explaining the objective of the study and the completion of the instruments. Those students who decided to participate were provided with informed consent for them and informed consent from the parent or guardian. Both documents described the purpose of the research, voluntary, anonymous and confidential participation, and that if they felt violated they could abandon the study without any repercussions.

Students who submitted the informed consent signed by the parent or guardian and the informed assent signed by themselves were provided with the QR code with an access link to the questionnaires. It is worth mentioning that the measurement instruments applied were programmed on the SurveyMonkey platform, which is characterized by the application of surveys through mobile devices. The authors of the study remained during the application of the questionnaires so that in case any participant expressed any doubt or disagreement, this could be addressed as soon as possible. Once their participation was completed, they

were thanked and given a pamphlet with information related to the prevention of risky behaviors in adolescents.

The study adhered to the ethical aspects established by the regulations of the General Health Law on Health Research (Ministry of Health, 1987) and the Mexican Official Standard 012 (Ministry of Health, 2013), which establish the essential criteria for the design, development and execution of research projects in human beings. Data capture and analysis was carried out in the statistical program SPSS version 23. Descriptive statistics such as frequencies, percentages, measures of central tendency and variability were used. An analysis of the distribution of continuous variables was performed with the Kolmogorov-Smirnov test for normality with the Lilliefors correction, and based on the results, the use of non-parametric statistical tests, such as the Spearman correlation coefficient, was determined in order to respond to the objective and the hypothesis posed in the research.

## Results

The results of the research are presented below. Based on personal and socio-demographic data, it is highlighted that 59.7% of the sample is female, 78% of the students are between 16 and 18 years old, in addition 89% only study and 11% study and work at the same time; 73.3% live with their father and mother while 18.3% live only with their mother. In relation to religion, 61.8% profess some. Regarding aspects of sexuality, 22.5% of the students report having an active sexual life.

Regarding *sexting*, a mean of 12.6 (SD = 1.7) was obtained overall. Regarding descriptive data, the findings show that 94.2% have never sent a photo or video of themselves in underwear using a mobile phone, as well as 91.1% have never sent a text message with proposals about sexual activity through social networks. However, 7.9% have occasionally sent a sexually suggestive text message using a mobile phone and 6.3% have sent a photo or video in underwear using a mobile phone (Table 1).



**Table 1.** Characteristics of *sexting* in adolescents.

<i>Sexting</i>	N		CN		OE		F		S	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
<i>Send a photo and/or video of myself</i>										
1. Sexually suggestive.	159	83.2	21	11.0	8	4.2	2	1.0	1	.5
2. In underwear using a mobile phone.	148	77.5	29	15.2	12	6.3	1	.5	1	.5
3. In underwear using social networks (Skype or similar).	180	94.2	7	3.7	3	1.6	0	0	1	.5
4. Naked/using a mobile phone.	1	.5	185	96.9	4	2.1	0	0	1	.5
5. Naked using social media.	1	.5	187	97.9	2	1.0	0	0	1	.5
<i>Send a text message</i>										
6. Sexually suggestive using a mobile phone.	144	75.4	29	15.2	15	7.9	1	.5	2	1.0
7. Sexually suggestive through social media.	166	86.9	17	8.9	5	2.6	2	1.0	1	.5
8. With proposals about sexual activity using a mobile phone.	160	83.8	18	9.4	10	5.2	2	1.0	1	.5
9. With proposals about sexual activity through social networks.	174	91.1	8	4.2	6	3.1	2	1.0	1	.5

Note: *f* = frequency, % = percentage, N = never, CN = almost never, EO = sometimes, F = frequently, S = always, n = 191. Source: Own elaboration

Regarding the characteristics of cyberbullying, an average of 10.3 (SD) was obtained (= 1.26). It is noteworthy that 97.4% indicated that they have never published someone's intimate secrets on the Internet and/or by mobile phone, and in the same category 96.3% have stalked or followed someone on the Internet or by mobile location service (GPS). However, 16.8% have sometimes insulted or ridiculed someone on the Internet and/or by mobile phone and 11% have sent things to scare or annoy someone, and 2.1% have called someone quite a few times and when they have answered they have remained silent (Table 2).

**Table 2.** Characteristics of cyberbullying in adolescents.

Questions	N		AV		BV		MV	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
1. I have insulted or ridiculed someone online and/or on a cell phone.	146	76.4	32	16.8	3	1.6	10	5.2
2. I have forced someone to do things with threats (e.g. bring money, not talk to someone, do something, have sex, etc.) over the internet and/or by cell phone.	179	93.7	10	5.2	1	.5	1	.5
3. I have posted lies and rumors about someone on the Internet and/or mobile phone.	182	95.3	9	4.7	0	0	0	0
4. I have published someone's intimate secrets on the Internet and/or mobile phone.	186	97.4	5	2.6	0	0	0	0
5. I have sent and/or faked photos or videos of someone without their permission.	173	90.6	15	7.9	2	1.0	1	.5
6. I have stalked or followed someone online or via mobile location service (GPS).	184	96.3	6	3.1	0	0	1	.5
7. I have called someone and when they answered I remained silent.	154	80.6	30	15.7	4	2.1	3	1.6
8. I have logged into other people's private accounts (Twitter, Facebook, Messenger, etc.) without their consent.	181	94.8	5	2.6	3	1.6	2	1.0
9. I have sent things to scare or annoy.	163	85.3	21	11.0	3	1.6	4	2.1
10. I have pretended to be someone else to do bad things on the Internet or mobile phone (e.g. criticize someone, sign up for a spam or paid service).	179	93.7	8	4.2	2	1.0	2	1.0

Note: *f* = frequency, % = percentage, N = never, AV = sometimes, BV = quite a few times and MV = many times, n = 191. Source: Own elaboration

When categorizing the scores obtained, the option with no risk of cyberbullying predominated in general, but men present higher values in the moderate risk compared to women (Table 3).

**Table 3.** Categories of the cyberbullying scale in adolescents

Categories	Global		Women		Men	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
No risk	167	87.4	104	91.2	63	81.8
Moderate risk	21	11.0	9	7.9	12	15.6
Severe risk	3	1.6	1	.9	2	2.6

Note: *f* = frequency, % = percentage, n = 191. Source: Own elaboration

Taking as a point of interest the active sexual life of adolescents with the total scores of *sexting* and cyberbullying, significant differences were obtained (Table 4), with higher values in those adolescents who reported an active sexual life ( $p < .05$ ).

To respond to the main objective and the hypothesis of the research, the Spearman correlation analysis was carried out, in which a positive and significant relationship was obtained between the scores of *sexting* and cyberbullying ( $r_s = .423$ ,  $p = .001$ ), which indicates that the greater the use of *sexting*, the greater the cyberbullying that adolescents may present.

**Table 4.** Sexual life of adolescents by *sexting* and cyberbullying.

Summation	Sex life	n	$\bar{X}$	OF	OR	<i>p</i>
<i>Sexting</i> scale	No	148	11.9	2.5	1942.5	.001
	Yeah	43	15.1	3.2		
<i>Cyberbullying</i> scale	No	148	10.1	1.1	2873.5	.040
	Yeah	43	10.6	1.6		

Note: n = 191,  $\bar{X}$  = mean, SD = standard deviation, U = Mann-Whitney U statistic, *p* = significance. Source: Own elaboration.

## Discussion

The study revealed the association between *sexting* and cyberbullying in 191 high school students from southern Mexico. The findings are worrying, since adolescents endanger their biopsychosocial development by engaging in these behaviors. Furthermore, the results show that the misuse of virtual spaces can lead to antisocial behavior, affecting not only those who engage in it, but also the people with whom they live and interact.

In relation to the *Sexting* was found that a large part of the sample reported not practicing sexting, contrary to what was found by Clancy *et al.* (2020) and Arias *et al.* (2018), who showed that participants have high prevalences of *sexting* via text messages. Verrastro *et al.* (2023) found that sexually active adolescents are those who practice *sexting more* and use social media more. The difference in results could be attributed to the cultural environment; in Latin America, a conservative society still predominates (as is the case in the southern region of Mexico), which influences child-rearing. Adolescents know that by practicing *sexting* they put their integrity at risk and may be victimized by the other person. For example, Orosco and Pomasunco (2020) mention that, regarding voluntary exposure, women are more cautious when using a webcam; however, being in the stage of adolescence, where physical and psychological changes occur, women are more exposed to the search for sensations or being encouraged and convinced to make intimate recordings. For this reason, it is very important to strengthen decision-making and risk identification skills, so that women have the ability to avoid any situation that violates their integrity and impacts their health, since the chances of photos and recordings being shared on social networks are high.

Likewise, it was found that a low percentage of adolescents have occasionally sent sexually suggestive text messages using a mobile phone and sent photos or videos in underwear. This agrees with Bianchi *et al.* (2016), who found that adolescents have two types of motivations for practicing *sexting*: the first is intra-individual motivation, in which they seek to explore their sexuality, flirt, seduce and conquer the other person; the second is extra-individual motivation, since with the messages other adolescents intend to obtain positive opinions of their body image, they seek physical acceptance of the other person to feel good. The latter is the most used motivation. Body image becomes part of the concerns of adolescents and gains strength at this stage where physical changes are imminent and many times the adolescent is not happy with his or her body.

Scientific evidence indicates that adolescents who practice *sexting* have a low perception of risk and are more likely to engage in other risky behaviors such as having unprotected sex, assaulting and/or cyberbullying their partners and peers (Alonso and Romero, 2020). This aspect could be associated with the tendency of adolescents to explore new situations in their attempts to define their autonomy, identity, independence and their desire to be accepted by their peers, although they often do not perceive the related risks due to their cognitive immaturity. Coupled with easy access to technology and the Internet, the risk increases, as they can become victims or perpetrators of this practice (Migliorato *et al.*

2018). *Sexting* has thus become a new way of exploring sexuality and teenagers are spending more and more time on the Internet, making this activity part of their daily lives.

Regarding cyberbullying, the scores indicate that a large part of the sample does not exercise cyber aggression, although in the present study a significant percentage of adolescents indicated that they have sometimes insulted or ridiculed someone on the Internet and/or mobile phone and have sent things to scare or annoy, in addition to forcing someone to do things with threats such as bringing money, not talking to someone, doing something, having sex on the Internet and/or mobile phone. These data, which are alarming, coincide with Roberto *et al.* (2014) and Reed *et al.* (2019), who point out high prevalences of virtual aggression of a psychological and sexual nature.

The results show that adolescence is a crucial stage in which there is the presence of risk behaviors, such as cyberbullying, which can be a repetitive intergenerational process, experienced or observed in peers or family members. Furthermore, the findings in the present study demonstrate that virtual spaces can favor the expression of immoral behaviors from a position of anonymity and invisibility and that some aggressive behaviors can be specific to the online context, since technology can be used as a tool to harm or attack without exposing one's identity, for example, sending a humiliating photograph of one's dating partner to others, posting personal information publicly online, and creating a fake social media account to monitor or harass ( Bonilla-Torres & Álvarez-Galarza, 2022; Pacheco *et al.* 2018).

When categorizing the scores obtained from the cyberbullying questionnaire, a level of no risk of said activity predominated, although a significant percentage was located at a moderate level, with men standing out with a higher proportion compared to women. In this way, it is observed how cyberaggression behavior is present in both sexes in adolescents, although with a greater inclination in the male sex, which can affect the biopsychosocial development of the adolescent during this stage of life. In this sense, Narvaja (2019) points out that participants who have had some type of aggression situation through messages on social networks or by cell phone are mainly carried out by a stranger, with women being the most affected, and the male sex being more involved in this type of behavior. Another author mentions that virtual aggression is increasing in an alarming way, with a significant percentage of males practicing this activity (Clancy *et al.* 2019).

The above could be explained culturally and socially, since the male sex assumes greater risk behaviors, perhaps to demonstrate manliness or to belong to a peer group, the latter could exert a strong influence to exercise these aggressive behaviors. Another

explanation could be the stage of adolescence, where there is metabolic, hormonal, sexual and neurological immaturity, which can increase impulsiveness to execute the search for new sensations, such as cyber aggression, since during this stage the risks and damage that these acts can cause to the other person are underestimated.

It was identified that adolescents with total scores for *sexting* and cyberbullying obtained significant differences, being higher in those adolescents who reported a sexually active life. In addition a positive and significant relationship was obtained between *sexting* and cyberbullying, indicating that the greater the use of *sexting*, the greater the involvement in cyberbullying. This is consistent with Rengifo (2023), who conducted a study on Peruvian adolescents and found a positive and significant relationship between both variables. Tamarit *et al.* (2021) report a significant positive relationship between *sexting* and extortion, further demonstrating that addiction increases the risk of erotic extortion. For their part, Hu, Clancy, and Klettke (2023) found no relationship between cyberbullying and non-consensual *sexting*. This shows us that the actions carried out with *sexting* can cause aggression in the victims and a large number of adolescents are affected by this behavior that puts their physical and mental integrity at risk.

### Limitations

This study has some limitations, including the fact that *sexting* and cyberbullying were measured by self-reports, so that adolescents could respond with a socially desirable approach. In addition, *sexting* was measured as an active behavior and cyberbullying as a perpetrator, which may limit the generalization of both constructs. Other limitations are the size and selection method of the sample, which could not generalize the results, and due to the design of this study, being cross-sectional in nature, causal inferences cannot be made. In future studies, it is suggested to address active and passive *sexting*, as well as cyberbullying as a perpetrator and victim; in addition, the sample size should be increased to have a better representation of the population and to make comparisons by sex of the participants. It is also suggested to expand the age range to include early, middle, and late adolescence, so it will be possible to make comparisons and identify in which phase of adolescence these types of behaviors occur most.



## Conclusions

Although the proportion of adolescents who reported engaging in *sexting* and cyberbullying was low, important results were identified that provide relevant information about the association between both variables and the possible impact that these risk behaviors could have on the adolescent's biopsychosocial development. In this sense, it was found that adolescents who reported a sexually active life had a higher *sexting* and cyberbullying score. In addition, a positive and significant relationship was obtained between *sexting* and cyberbullying, so these behaviors merit preventive monitoring to strengthen adolescents' cybersecurity. That is why it is important for parents to have greater control over the use of smart technologies and the Internet in their children, since misuse could trigger dangerous behaviors that affect the physical and psychological integrity of the adolescent and the people with whom they interact virtually.

In light of this, it is necessary for health professionals and those in related fields to work in a coordinated manner to identify these risk factors and design preventive programs that promote safe sexual practices in adolescents, so that they can develop in a safe and responsible virtual environment. It is necessary for adolescents to have the ability to identify the risks that the misuse of the Internet and social networks entails.

## Contributions to future lines of research

It is considered to continue studying *sexting* and cyberbullying in adolescents, since there are still gaps to be explained, for example, it would be necessary to address *sexting* through other instruments that allow measuring this behavior in adolescents in a consensual and non-consensual manner, in order to identify the directionality and carry out predictive studies that allow showing that *sexting* could be a risk factor present for exercising cyberbullying.

It is suggested that longitudinal studies be carried out to analyse the behaviour of these variables over time and their impact on the subject. It would be important to broaden the age range and study the group of pre-adolescents and young adults to assess their behaviour with the use of technology and the Internet; also to add other variables such as depression, anxiety, violence and suicide attempts, to carry out a more in-depth analysis of the repercussions that *sexting* and cyberbullying have on the physical, emotional and social integrity of people and their families.

It would also be important to analyze the psychological profile of the perpetrator and the victim to determine which factors influence the perpetration and acceptance of bullying behaviors and thus establish strategies for care by specialized health professionals to help counteract these behaviors. It would be important to define lines of research that allow the implementation of psychoeducational interventions that help prevent these behaviors, where parents can also participate.

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