

# Internet influence on the biopsychosocial health of adolescents: an integrative review

*A influência da internet na saúde biopsicossocial do adolescente: revisão integrativa*  
*La influencia de internet en la salud biopsicossocial del adolescente: revisión integradora*

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#### ABSTRACT

**Objectives:** To identify scientific evidence on the influence of internet use on adolescents' biopsychosocial health. **Methods:** Integrative review, with database search, using the descriptors "internet", "adolescent health" and "adolescent behavior". After applying the inclusion and exclusion criteria, 16 articles were selected. **Results:** Knowledge convergence produced for three main themes was demonstrated: "Internet exposure time and possible damages to adolescent health"; "Internet, adolescent and cyberbullying"; and "Internet as a source of information for adolescent health". **Final considerations:** The network involves an intricate network of interactions, providing varied behaviors and attitudes that reflect on adolescent health. Therefore, it is important to articulate nursing actions with the school community and the family, in order to carry out health education.

**Descriptors:** Internet; Adolescent Behavior; Adolescent Health; Health Education; Nursing.

#### RESUMO

**Objetivos:** Identificar evidências científicas acerca da influência do uso da internet na saúde biopsicossocial do adolescente. **Métodos:** Revisão integrativa, com pesquisa em bases de dados, utilizando os descritores "internet", "saúde do adolescente" e "comportamento do adolescente". Após aplicação dos critérios de inclusão e exclusão, foram selecionados 16 artigos. **Resultados:** Evidenciou-se a convergência do conhecimento produzido para três temas principais: "Tempo de exposição à internet e possíveis prejuízos à saúde do adolescente"; "Internet, adolescente e cyberbullying"; "Internet como fonte de informações para saúde adolescente". **Considerações finais:** A rede envolve uma intrincada trama de interações, propiciando comportamentos e atitudes variadas que refletem na saúde do adolescente. Logo, é importante articular as ações de enfermagem com a comunidade escolar e a família, no intuito de realizar educação em saúde.

**Descritores:** Internet; Comportamento do Adolescente; Saúde do Adolescente; Educação em Saúde; Enfermagem.

#### RESUMEN

**Objetivos:** Identificar evidencias científicas acerca de la influencia del uso de Internet en la salud biopsicosocial del adolescente. **Métodos:** Revisión integradora, con investigación en bases de datos, utilizando los descriptores "internet", "salud del adolescente" y "comportamiento del adolescente". Después de la aplicación de los criterios de inclusión y exclusión, se seleccionaron 16 artículos. **Resultados:** Se evidenció la convergencia del conocimiento producido para tres temas principales: "El tiempo de exposición a Internet y los posibles perjuicios a la salud del adolescente"; "Internet, el adolescente y cyberbullying"; "Internet como fuente de información para la salud adolescente". **Consideraciones finales:** La red involucra una intrincada trama de interacciones, propiciando comportamientos y actitudes variadas que reflejan en la salud del adolescente. Por lo tanto, es importante articular las acciones de enfermería con la comunidad escolar y la familia, con el fin de realizar educación para la salud.

**Descritores:** Internet; Comportamiento del Adolescente; Salud del Adolescente; Educación para la Salud; Enfermería.

## INTRODUCTION

The technological advance from the last decades has brought about unexpected changes in society, which have had relevance in the public and private sectors, as well as in the social, political and economic contexts<sup>(1)</sup>. Internet was one of the technologies responsible for transforming people's way of life. It is characterized by being a worldwide network with high transmission capacity that allows dissemination of information, interaction and collaboration between individuals and computers, without the need for those involved to share the same physical space<sup>(2)</sup>.

Individuals experience several stages throughout life: childhood, adolescence, maturity and aging, which impose different informational needs. The search for knowledge varies significantly in each of these phases and is closely linked to the conjunctures faced in daily life<sup>(3)</sup>.

Adolescence is understood by the scientific tradition as the phase of life between childhood and adulthood. It results in the formation of identity, which is the result of the relations between biological and social dimensions, which are permeating throughout life. Therefore, it is marked as a period of instability, doubts, curiosities and crisis. However, this concept has been undergoing a process of transformation related to the social representations of the adolescent himself, since at the present moment he has a symbolic representativeness highlighted in the different media channels<sup>(4)</sup>, such as television, cinema and internet.

Internet is part of everyday of adolescents. According to the National Household Sample Survey (PNAD - *Pesquisa Nacional por Amostras de Domicílio*) carried out in 2015 adolescents between 15 and 17 and between 18 and 19 years old constitute the group of people that most access the network with percentages equivalent to 82.0 % and 82.9%, respectively<sup>(5)</sup>.

The main place of access to the internet by adolescents is their own home, but this also occurs at friends' homes, in lan houses, at school and on the cell phone. Time spent surfing the internet is 2 to 3 hours a day, on average. It is worth noting that adolescents recognize advantages and disadvantages of the internet. As advantages, they mentioned speed, economy, meeting up people, increasing the number of friends and not having to be present in the same physical space. Disadvantages were the possibility of addiction, danger of surfing on the internet and lack of physical contact<sup>(6)</sup>.

The most commonly used tools are social networks, e-mail, online games and instant messaging applications<sup>(7)</sup>. Adolescents understand that virtual communication has enabled the use of new languages and selection of websites that favor greater freedom of expression. They reveal that dialogues carried out in the virtual environment are as intense as in a physical encounter, perhaps more intimate. The virtual space has been configured as a social laboratory for real life, so that the Internet has also been used as a way to overcome social difficulties, emotional conflicts and shyness<sup>(8)</sup>.

A large study in Europe showed a relative concern about parents' access to the internet, since 28% of parents revealed blocking or filtering websites, and 23% reported watching sites visited by their children<sup>(9)</sup>. However, the study data showed that

the majority of parents do not know the essence of websites accessed by their children, such as the effects of content on the health of their offspring.

Parents' positioning can be explained by the culture of permissiveness in which, in Brazil, it is the result of distortions regarding parents' attitudes and misinterpretation of the Child and Adolescent Statute (ECA - *Estatuto da Criança e do Adolescente*) in relation to biopsychosocial aspects. Another plausible explanation for the behavior of parents is the illusion that their children are safe at home in front of the computer, which denotes ignorance that the risk lies in associations and readings that adolescents make of the content exposed in the network<sup>(9)</sup>. Observing how young people are using the internet is extremely relevant. Inadequate use of the network may result in psychological and behavioral impacts and may lead to negative behavioral changes, such as loss of control, feelings of guilt, isolation, family conflict and decline in school performance<sup>(10-11)</sup>; factors that directly affect the adolescent's biopsychosocial health.

## OBJECTIVES

To identify scientific evidence on the influence of internet use on adolescents' biopsychosocial health.

## METHODS

### Ethical aspects

There was no need to submit this project to the Research Ethics Committee, as this is a literature review. However, it is emphasized that the original ideas of authors were kept in the process of synthesizing their research.

### Type of study

An integrative review was carried out, which is a method that allows synthesizing and analyzing data to develop a more comprehensive explanation of a specific phenomenon based on the synthesis or analysis of the study findings, with theoretical and/or interventional purposes<sup>(12)</sup>.

### Collection and organization of data

The Integrative Review was structured in six phases: elaboration of the research question; establishment of inclusion and exclusion criteria of studies (composition of the *corpus* for analysis); definition of the information to be extracted from the articles to be analyzed (categorization); analysis of information; interpretation of the results and presentation of the review (knowledge synthesis)<sup>(12)</sup>. It was established as a guiding question of the research: what is the influence of internet use on the biopsychosocial health of the adolescent?

Firstly, a free search was carried out in Latin American and Caribbean Literature in Health Sciences (LILACS), *Índice Bibliográfico Espanhol de Ciências da Saúde* (IBICS), and in the directory of Scientific Electronic Library Online (SciELO). For the survey of publications, the controlled descriptors were used: "Internet",

“Adolescent Health” and “Adolescent Behavior”. Cross-referencing of the descriptors was performed using the Boolean operator AND.

### Inclusion and exclusion criteria

Inclusion criteria were designated as publications in the format of original articles, published in full in the years 2012/2013/2014/2015/2016, in Portuguese/Spanish/English, made available electronically free of charge. While exclusion criteria were: repetition in the databases and did not answer the research question.

### Data analysis

After the analysis corpus composition, a database was developed in Microsoft Office Excel 2010 software, which allowed the following information to be gathered and organized: article title, profession of the first author, year of publication, country, journal title, nationality of study participants, design, intervention and outcome. In this way, the obtained data were grouped in instrumental frames and in thematic categories by similarity of content. Results were interpreted based on the literature related to the study theme.

## RESULTS

After applying the inclusion and exclusion criteria, sixteen articles for analysis were selected as represented in Figure 1.

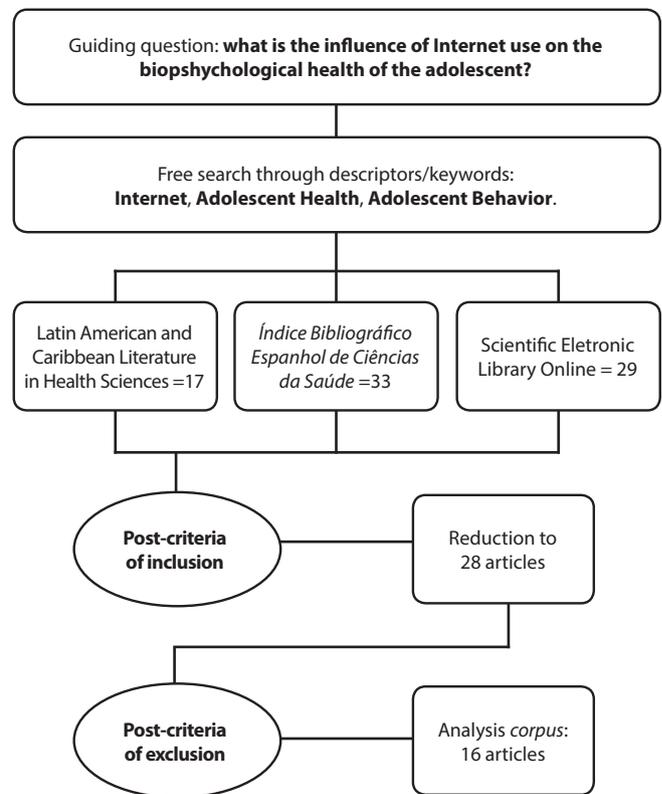


Figure 1 – Diagram of results of the selection of articles for analysis

Chart 1- Thematic categorization of the articles analyzed

Article, Year, Journal	Objective	Outcomes	Category
A1 <sup>(13)</sup> , 2014, Adicciones	To evaluate the relationship between duration of Internet use and adverse psychosocial effects among adolescents from six European countries.	Significant association between the duration of internet use and the frequency of occurrence of school and psychosocial problems.	Internet exposure time and possible damage to adolescent health
A2 <sup>(14)</sup> , 2014, Anales de psicología	To provide documents on perceptions and habits of Internet use and social networks among adolescents.	Adolescent internet use has been noticed by the adolescents and they claim that they do not connect to everything they would like.	Internet exposure time and possible damage to adolescent health
A3 <sup>(15)</sup> , 2014, Psicothema	To develop a screening tool for early detection of problematic Internet use in adolescents.	The use of a screening tool allows the gradation of adolescents in a <i>continuum</i> of risk, although it does not offer diagnosis.	Internet exposure time and possible damage to adolescent health
A4 <sup>(16)</sup> , 2015, Acta Pediatric	To know the frequency and ICT technologies use by adolescents of the province of Valladolid, to detect risks and to evaluate the possibility of adapting behavior.	ICTs use is widespread, being highlighted as risk factors: overuse, dependence, access to inappropriate content, cases of cyberbullying and sexting.	Internet exposure time and possible damage to adolescent health
A5 <sup>(17)</sup> , 2016, Rev Latinoamericana de Ciencias Sociales	To analyze Internet use and mobile phones by adolescents.	Teenagers use the Internet massively, accessing it more and more over the cell phone, for longer periods.	Internet exposure time and possible damage to adolescent health
A6 <sup>(18)</sup> , 2012, Cad. Saúde Pública	To describe the patterns of sedentary behavior in Spanish adolescents and establish how many of them do not comply with public health recommendations on sedentary behavior.	Most adolescents did not comply with public health recommendations for sedentary behavior.	Internet exposure time and possible damage to adolescent health
A7 <sup>(19)</sup> , 2016, Rev Paul Pediatr	To determine the exposure of schoolchildren to four different indicators of sedentary behavior (SB) and their associations with gender, school grade, age, economic status and level of physical activity.	The prevalence of sedentary behavior was high, mainly at weekends and the propensity to surf the internet more than two hours a day.	Internet exposure time and possible damage to adolescent health

To be continued

Chart 1 (concluded)

Article, Year, Journal	Objective	Outcomes	Category
A8 <sup>(20)</sup> , 2012, <i>Psicothema</i>	To investigate students' awareness and understanding of legal aspects of cyberbullying.	There is a considerable gap between what students should know and what they report to be aware about the legal aspects of cyberbullying.	Internet, adolescent and cyberbullying
A9 <sup>(21)</sup> , 2012, <i>Psicothema</i>	To describe and evaluate a tool implemented against bullying and cyberbullying in an Italian teen audience.	Decreased bullying, victimization and cyberbullying, along with the development of adaptation strategies in the control group.	Internet, adolescent and cyberbullying
A10 <sup>(22)</sup> , 2012, <i>Psicothema</i>	Contribute to the field of cyberbullying research through a comprehensive theoretical framework that helps predict the perpetration of cyberbullying in adolescent students.	Attitude is the greatest perpetrator of cyberbullying. Possible triggering factors: online anonymity, attainability and lack of visual feedback from the cybervictim when the pain is real and caused by digital actions.	Internet, adolescent and cyberbullying
A11 <sup>(23)</sup> , 2012, <i>Rev Méd Urug</i>	To present a clinical case of a victim of traditional bullying and after cyberbullying who attempted suicide.	He reported receiving text messages that belittled his physical characteristics and what his parents said to ignore, because everything was going to happen.	Internet, adolescent and cyberbullying
A12 <sup>(24)</sup> , 2015, <i>Anales de Psicología</i>	To analyze the changes in cyberbullying according to age.	Behavior of cyberbullying as well as that of observation increases with age.	Internet, adolescent and cyberbullying
A13 <sup>(25)</sup> , 2015, <i>International Journal of Clinical and Health Psychology</i>	To analyze the predictive capacity of several sociodemographic psychological, educational, family and technological factors, in probable cases of occasional or severe cyber-victimization in a sample of Spanish adolescents.	Internet risk behaviors, social networks use or instant messaging programs, and the frequency of Internet use are the gateways to cyber-victimization, which can be occasional, moderate or severe.	Internet, adolescent and cyberbullying
A14 <sup>(26)</sup> , 2012, <i>Rev Panam Salud Publica</i>	To verify how the onset of the sexual activity of young Salvadorans is influenced by the messages they receive about sexuality, affectivity and leisure through family, friends and the media.	The environment that surrounds adolescents, formed by family, friends and the media (journals and the internet) is a factor that influences the activities of adolescents from Salvadorans.	Internet as a source of information for adolescent health
A15 <sup>(27)</sup> , 2015, <i>J Pediatr</i>	To evaluate the usability of a Next.Step therapeutic platform that aims to promote behavior change and improve the health status of adolescents through improved and interactive contact between the adolescent and the clinical staff.	Adolescents were satisfied with using the Next.Step platform. The post-intervention evaluation showed a significant reduction in the anthropometric and behavioral variables of the users.	Internet as a source of information for adolescent health
A16 <sup>(28)</sup> , 2016, <i>Revista Portuguesa de Enfermagem de Saúde Mental</i>	To know the positive and negative aspects related to the search of health information on the Internet by adolescents with chronic disease.	There were indications of positive aspects such as the understanding of chronic disease and the influence of the communication media in the treatment and self-care; and negative aspects, such as lack of intelligible content and questions regarding the security of the site and the veracity of the information.	Internet as a source of information for adolescent health

Note: ICT: Information and Communications Technology.

The largest proportion of articles (43.75%) was published in 2012. Spain was the country responsible for most publications (56.25%), involving Internet use in relation to the biopsychosocial health of adolescents. Teachers (25%), doctors (12.5%) and nurses (6.25%) were the first authors. *Revista Psicothema* had the largest number of publications on the subject (25%). Regarding the articles content, there is convergence of knowledge produced for 3 main themes: "Internet exposure time and possible damages to adolescent health"; "Internet, adolescent and cyberbullying"; "Internet as a source of information for adolescent health"; and "Internet as a source of information for adolescent health". Chart 1 presents the synopsis of the content focused on articles that composed the sample of this integrative review and its thematic categorization.

In the articles analyzed, the quantitative approach (81.25%) was predominant over qualitative (18.75%). The questionnaire

was the most frequently used intervention (A1, A2, A3, A5, A6, A7, A8, A9, A10, A12, A13, A14, A16) but also interview (A11 and A16) and access to the Internet platform was used in association with other interventions.

## DISCUSSION

Internet use is a global phenomenon for people and this practice is more common among adolescents, a fact that generates concern among the scientific community, especially among health professionals, especially in Psychology, due to its influence on behavior<sup>(6)</sup>, which can affect the biopsychosocial health of the adolescent as a whole. The following will be presented the themes that involve the adolescent behavior related to Internet use and its influence on their health.

## Theme I - Internet exposure time and possible damages to adolescent health

In Europe, about 94% of adolescents have access to the network in their own homes and use it more than 20 hours during the week<sup>(13)</sup>. A portion of these Internet users remain connected for a period ranging from 1 hour and 2 hours daily. However, there is a percentage that exceeds this connection time, remaining in the network for more than 3 hours<sup>(14)</sup>. A recent survey found the dependence of the Internet on 70.6% of adolescents, showing a higher percentage in girls (77.5%) than in boys (64.5%)<sup>(16)</sup>.

Excessive Internet use of content and access by adolescents causes harm to activities such as outdoor games, sports, socializing with pets and people, playful, artistic and educational activities<sup>(29)</sup>. In scientific research, in universities around the world, have shown the relationship between compulsive Internet use, as well as with electronic games and social networks, with several human implications: attention deficit, difficulty concentrating, decreased memory capacity, social isolation, stimulation of sexuality; manifesting itself in several behaviors in adolescents with diverse economic and cultural social conditions<sup>(29)</sup>.

These risk behaviors, especially those involving sexual and violent content, are associated with the urban environment and poor school performance. There is therefore a need for greater commitment on the part of parents, guardians, professionals and institutions to inform and educate young people, especially as regards the risks arising from the use of new technologies<sup>(16)</sup>. The problem of compulsive internet use mobilized the American Psychiatric Association (APA), so that it was verified. The fifth review of the Diagnostic and Statistical Manual of Mental Disorders (DSM) included criteria for diagnosing a subtype of compulsive internet use and addiction to electronic gaming<sup>(30)</sup>.

According to the Diagnostic and Statistical Manual of Mental Disorders V, there are nine criteria, among them: excessive worry, always thinking about the next game before finishing the previous one; abstinence, characterized by irritability, anxiety and sadness; tolerance - spending compulsively on internet games or materials; control of participation in online games; loss of interest in other entertainments; denial in recognizing that it is an addiction; deceiving people from their social life; the use as therapy and exclusive or semi-dedication, disrupting the relationship, education, professional career because of participation in online games<sup>(30)</sup>.

Compulsive Internet use by adolescents triggers family conflicts, due to the time spent on the network, a fact that leads parents to seek alternatives to control this use and avoid compulsion<sup>(13)</sup>. However, access to the network seems to be a quiet thing for the youngsters, since 77.9% of adolescents never claim, or only rarely, to discuss with their parents due to Internet use, while 6.3% reported having problems many times and 14, 6%, occasionally<sup>(15)</sup>.

Caring for internet use is essential to preserve the integrity of the child and adolescent. And for this, parental control is paramount and was established in Article 29 of Law 12,965 of April 23, 2014 - *Marco Civil da Internet* Law - establishes principles, guarantees, rights and duties for Internet use of Brazil<sup>(31)</sup>. Among the reasons that lead teenagers to connect to the Internet, we highlight access to social networks (85%), download music, movies, videos or images (64.4%), search for information related to the studies

(60.2%), make use of electronic mail (52.1%), play (28.2%); being these games of different types and formats, as much of individual character as group, including the traditional games of chance<sup>(14)</sup>.

Another worrying fact is the online teenager's behavior as: interaction with strangers (18.9%), access to photos or videos of sexual content (39.3%), viewing violent or racist photos/videos, receiving offensive messages (12.3%) and/or insulting/threatening another surfer, posting their photos or videos on the Internet in sexy, provocative or inappropriate positions (4.1%) and disseminating other people without asking for their consent (19.6%)<sup>(16)</sup>. 36.2% of adolescents do not affirm that they do not connect to everything they would like<sup>(14)</sup>.

Given this picture, it should be mentioned that a survey of Galician adolescents showed that 19.9% were classified as potentially problematic Internet users by screening tool. This tool allowed staggering adolescents on a *continuum* of risk. However, its results could not be considered as a diagnosis, due to the lack of criteria established and agreed to the clinical evaluation<sup>(15)</sup>. Even so, they served as an alert to potential victims and upcoming risks related to adolescent Internet use.

Regarding adolescent health, there were potential losses, a significant relationship between the duration of internet use for a period greater than 20 hours per week and the use of legal and illegal drugs. It was analyzed that the higher the exposure to the network, the greater the tendency to consume alcohol, tobacco and *cannabis sativa* - marijuana. Add to this other psychosocial problems, such as low school performance, absenteeism and the use of slot machines<sup>(13)</sup>. It is important to remember that they are closely linked to the consumption of illegal drugs, motor vehicle accidents, police infractions, family disputes, social dissociation, unwanted sex and sexually transmitted diseases<sup>(13)</sup>.

In a Brazilian survey on sedentary behavior, excessive time for internet connection was co-responsible for sedentary in adolescents. There was a prevalence of use on the weekdays (69.2%) over the weekend (79.6%), and adolescents with a higher economic condition were more likely to spend time with electronic games and internet. On the other hand, individuals who already practiced physical activities were less predisposed to engage in sedentary activities<sup>(19)</sup>.

Similar research was carried out in Spain. It was verified that, in 17% of adolescents, the internet is responsible for sedentary behavior, with girls being more involved with internet activities and boys with electronic games. It was concluded that most adolescents spend more than two hours a day on screen-based activities such as TV viewing, computer games, electronic games, and internet browsing, thus failing to comply with public health recommendations for sedentary behavior<sup>(18)</sup>.

Different ways of using the internet and its interactivity with daily life make it a versatile and culturally accepted practice, with a strong tendency to intensify even more in the near future. Health and education professionals need to understand the complexity of this interaction and connection, as well as analyze it as a public health issue, since sedentary causes risks that negatively reflect the quality of life and health of the user<sup>(19)</sup>.

## Theme II - Internet, adolescent and cyberbullying

Technological advances have led to the emergence of new forms of violence among adolescents, which imposes the need

for research in order to understand these phenomena and to plan intervention and prevention strategies<sup>(23)</sup>. Cyberbullying is a type of violence that had its concept structured from the concept of bullying, defined by Dan Olweus, in the 1970s. It is characterized by intimidation that some students suffer from their peers repeatedly, where the aggressor is the one who intentionally triggers or encourages aggression to another or to others by means of negative actions and have as a means of dissemination new technologies, especially the internet<sup>(23)</sup>.

It has been proven in a survey of six Belgian schools that 6.3% of students were cyberbullying victims. Of these, 4.7% of respondents experienced harassment once and, 1.6%, several times in the three months preceding the survey. At the time, 12.1% of respondents reported that they had already invaded the social network of someone they knew online or offline, with 8.7% having had this attitude only once, and 3.4%, several times in the three months before data collection. Therefore, the behavior of those interviewed have shown themselves to be the greatest perpetrator of cyberbullying, because the more adolescents validate attitudes conducive to this behavior, the more they reveal the intention to perform cyberbullying<sup>(22)</sup>.

They have unlimited access to a number of online tools, which they can use discreetly, so it is difficult to supervise them without the help of a teenager. In addition, there is a considerable gap between what students should know and what they report to be aware about legal aspects of cyberbullying<sup>(20)</sup>. Among the possible triggering aspects of this act, there is online anonymity, attainability and lack of visual feedback of the cyber-crime, regarding the pain inflicted by digital actions<sup>(22)</sup>.

Digital violence can generate serious repercussions on the physical or mental health, or both, of those who experience it, implying changes in social, family and school levels<sup>(23)</sup>. However, cyberbullying has been practiced and perpetuated as age increases among adolescents, through actions such as disseminating compromising photos, threatening and blackmailing, sexually harassing, stealing the password, terrorizing with death. The number of observers also increases with age, and their behavior is revealed by the passivity of sending messages and offensive calls, spreading unauthorized photos to humiliate and depreciate, anonymous calls to scare, stealing passwords, isolating in social networks, coercion, threatening to kill, defaming/spreading rumors<sup>(24)</sup>.

Age, offline victimization/traditional bullying, parental control, Internet risk behaviors, use of social networks with instant message programs, and internet access on weekends are statistically significant risk factors for both occasional and severe cyber-victimization<sup>(25)</sup>. Shyness and anxiety variables seem to have an indirect effect in cases of cyberbullying, since they increase the risk of suffering both casual and severe virtual harassment. But self-esteem has been shown to be a significant protective factor for occasional cyber-victimization<sup>(25)</sup>.

The concern with cyber-victimization is not only the responsibility of educational centers. Families and the media should also play an active role in transmitting values and promoting the responsible use of mobile phones and the internet<sup>(25)</sup>. An alternative to raising the awareness of Italian teenagers about cyberbullying was to develop offline and online dynamics in partnership with teachers, where activities aimed at an end

product: short films, posters, counseling and discussion forums. There was a reduction in bullying, victimization and cyberbullying in the control group, and development of adaptation strategies, which contributed to reduction of school dropout and the latter to reduction of victimization<sup>(21)</sup>.

With a view to promoting the health of Brazilian children and adolescents, the School Health Program/PES was created in 2007, which consists of an intersectoral policy, which punctuates integration and permanent articulation of education and health. Therefore, PSE aims to contribute to the strengthening of actions, in order to provide the school community with participation in programs and projects that articulate health and education, to address vulnerabilities that compromise the full development of Brazilian children, adolescents and young people<sup>(32)</sup>.

### **Theme III – Internet as a source of information for adolescent health**

In the study with Salvadoran adolescents, it was verified that their sexual relations were influenced by family, friends and means of communication, among which the Internet. The network was constituted as a source of information about love and sex for 31.5% of the participants of the analysis in the country's capital<sup>(26)</sup>.

Internet is one of the most important sources of information and a tool that offers a wide knowledge about health, giving opportunities for more agile decisions, changes of behavior and new ways to mediate a better quality of life<sup>(33)</sup>. Research carried out in the virtual environment by adolescents with chronic disease in Brazil made it possible to cope with the disease. From this online search, they understood the procedures and treatment, favoring adherence to therapy<sup>(28)</sup>.

One of the negative aspects highlighted by adolescents was the language with which the information was made available on the network. The technical terms made it difficult to understand some aspects of its illness, such as the excess or lack of content. It has also been reported that it is difficult to identify websites that offer security with regard to the information provided. This serves as an alert to observe populations affected by chronic diseases, avoiding generalizations<sup>(28)</sup>.

Internet may also be useful in the treatment of obesity. Next. Step platform, for example, was used as a therapeutic space, aimed at promoting changes in inappropriate habits and improvements in the health of overweight adolescents and assisted in their interaction with the health team<sup>(27)</sup>.

Adolescents who accessed the platform consulted their resources and demonstrated their approval because it was considered exciting and fast. However, the item that mentioned discussions and sharing, among the adolescents themselves, did not have good acceptance. This fact can be explained because overweight adolescents, even protected by anonymity in cyberspace, are uncomfortable interacting with their peers on issues that generate conflicts. Even so, there was reduction in the anthropometric variables of participants<sup>(27)</sup>.

Internet use is feasible and efficient not only as a means of consultation, but as a method for monitoring and weight loss, being a great ally in the treatment of obesity and other comorbidities<sup>(34)</sup>. Among the various media, the internet stands out due to its infinity of stimulus possibilities, favoring an active posture of

the individual/adolescent in the dynamic health process, which is influenced by social, economic, cultural, environmental, ethnic, psychological and behavioral factors<sup>(34)</sup>.

### Study limitations

Limitations of the study are related to the exclusion of incomplete articles, abstracts and those in languages other than English, Portuguese and Spanish.

### Contributions to the field of Nursing, Health or Public Health

It is hoped that this literature review may subsidize the work of nursing, either to arouse the interest of researchers to the focused themes or to implement actions in a similar way as the primary health care network in the community.

### FINAL CONSIDERATIONS

Research has shown a multi-faceted relationship between adolescents and the internet. The network involves an intricate

network of interactions, providing varied behaviors and attitudes that reflect on adolescent health. Possible damages to the biopsychosocial health of the adolescent in the form of addictive behaviors, use of legal and illegal drugs, sedentary and cyberbullying. Health benefits, such as coping with chronic diseases and reducing overweight, have also been demonstrated through access to information and therapeutic tools available on the network.

Majority authorship of psychologists was verified in the analyzed studies, whereas only one study was authored by nurses. This fact warns of the need for greater involvement of nursing researchers with new technologies. Especially the internet, both with regard to the health damage caused by the excessive use of this technology, and in the exploration of its possibilities as therapeutic adjunct, in the process of self-care and health education.

Adolescence is a period marked by curiosities that induce to follow paths that are not always healthy. Thus, it is important to articulate nursing actions with the school community and the family, in order to carry out health education. As health awareness in the population develops, risks are minimized, and the individual is empowered to take care of himself and others.

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