

INFLUENCE OF ADDICTIONS TO NEW TECHNOLOGIES ON YOUNG PEOPLE'S SLEEPING AND EATING HABITS

M. Molina-Alarcón¹, B. Sánchez-Rojo², M.C. Ruiz-Grao¹, M. Molina-Alarcón³,
J. Rodríguez-Almagro², A. Hernández-Martínez¹

¹Universidad de Castilla-La Mancha, Facultad de Enfermería. IDINE (SPAIN)

²Universidad de Castilla-La Mancha, Facultad de Enfermería (SPAIN)

³Universitat Politècnica De València. Facultat de Belles Arts. IDINE (SPAIN)

Abstract

Life is what goes by while you are watching a screen

Introduction: An addiction can be defined as a pathological state that leads to dependence, blocks the control of different aspects of people's daily lives, influences conscience and diminishes interests in learning and communicating. Information and communication technologies are a series of electronic devices that are increasingly being used by the general population that have helped create a new lifestyle, especially for youths. Their suitable use entails many advantages and benefits, but their improper use can mean serious problems, of which inappropriate sleeping and eating habits stand out, which have several repercussions on the lives of young people. Surfing the Internet, using a mobile telephone, playing video games or watching TV have changed people's lifestyle. This new lifestyle is strongly influencing the young people who were born in this era of advanced technologies. Therefore, we can state that the new technologies field is one of the aspects in which young people possess considerable knowledge and skills.

Objective: To know the impact of addiction to new technologies and their excessive use on young people's sleeping and eating habits.

Method: the literature search was done in various databases via PubMed, Scielo, ProQuest and Wiley Online Library. Twelve articles that met the set criteria, conducted on excessive use or addiction of ICT and about sleeping and eating habits, were analysed.

Results: The studied population included both children and adolescents (8-26 years) because the use of ICT is widespread in both these life stages. The most widely used technology was the Internet, which is a tool found in almost any electronic device.

All the studies stated that prolonged ICT use makes young people more prone to sleepiness in the morning. They also confirmed that the likelihood of daytime sleepiness in Internet addicts is 5.9-fold higher than for non-addicts, and that the more time they spend using electronic means, the later they go to bed ($p=.003$), which implies irregular sleeping habits. These studies also reported that the youths who spend more time using ICT, TV, the Internet or video games are more likely to eat unhealthy food, and drink more sugary energy drinks and fast-food. Therefore, a significant relation was found between using electronic means and not eating breakfast or supper.

Conclusions: addictions to new technologies negatively influence young people's sleeping and eating habits.

Keywords: New technologies. Addition. Sleeping habits. Eating habits. Young people.

1 INTRODUCTION

Information and communication technologies (ICT) involve a series of electronic devices that are increasingly used in our day-to-day lives and in the general population. These devices include many advantages if suitably employed, and can improve people's quality of life as they combine and transmit information swiftly and easily, which facilitates communication, commerce, education, along with entertainment and fun, and other different activities.¹ People positively use new technologies when they do not place to one side normal everyday life activities. However, some people abuse them, which can lead to addiction. Inappropriate ICT use gets in the way of people performing usual tasks, which they often ignore to spend more time to use them.^{2,3}

This new lifestyle particularly impacts the youths born during the advanced technologies period. Some authors talk about a generation gap (digital divide); that is, on the one hand, youths are more familiar with technologies and are known as digital natives but, on the other hand, adults have had to adapt to them in their lifetime and are known as digital immigrants.⁴ So it is important to know how Spanish youths employ new technologies. A survey conducted on habits, use and security of the Internet with Spanish minors and youths aged 10-17 years This survey indicated that 60% of youths aged 10-15 years used the Internet every day, and such use rose to 83% for those aged over 15. Moreover, it was found that frequency of using ICT increased with age, and the use of most minors aged 10-17 years was more frequent as they spent more than 2 hours a day employing ICT, and longer at weekends. Another piece of information to bear in mind is that parents allow their children to use the Internet and trust them.⁵

“Addiction is a pathological pastime that generates dependence and deprives humans of freedom as it narrows their scope of conscience and restricts their interests from spreading”.² Addictive conducts are firstly controlled by positive intensifiers (the pleasant aspect of conduct), but end up being controlled by negative intensifiers (relief from emotional tension).^{2,6} Nowadays, not much importance is attached to problems deriving from the unsuitable use of new technologies. Indeed the published fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) does not include additions to technologies as a diagnosis, but includes a new category: “Disorders not related to substances”. Such disorders refer to conduct addictions, where we could consider addiction to technologies.⁷ “Conduct addictions are characterised by loss of control and psychological dependence on activities or situations which, in their own right, are not harmful for people’s health. However, these addictions lead to lack of interest in other gratifying activities and seriously interfere with all other aspects of an affected person’s life”. Addictions to ICT resemble those caused by taking substances, and the difference between both addictions lies in ICT addiction lacking a substance.³

The use of new technologies in the general population is widespread. However, some people are more vulnerable to addictions than others, and these addictions depend on each person’s personality and their emotional state. For instance, such addictions are more likely to appear in people who are very impulsive, dysphoric, and in those who seek strong emotions or do not tolerate boring and monotonous stimuli. Addictions also appear in people who have lived some crisis or form of instability. Addiction can often underlie a personality problem, like shyness or poor self-esteem, or be related to psychiatric problems like depression, attention deficit hyperactivity disorder (ADHD), social phobia, etc. Therefore, a person’s surroundings can be an important factor in addictions as they influence whether the relationship with the family is satisfactory or not, or if their social links are suitable or poor. Another relevant element to bear in mind is easy accessibility to ICT and their low cost.^{2,7}

It is important to know the alarm signals that indicate that dependence on technologies is beginning. These signals include lack of sleep (sleeping less than 5 hours) in order to be connected to or spend a lot time on the Internet and ignore important activities, hearing complaints about Internet use from someone close, constantly thinking about the Internet, feeling irritated when connection fails or is slow, attempting to be connected for shorter times, but not fulfilling this aim, lying about the time actually spent, becoming socially isolated, feeling euphoria and acting abnormally when using ICT.^{2,7,8}

One of the problems of abusing and addictions to new technologies is that this practice can have severe repercussions on the population’s health in both physical (different postural positions, loss of eyesight, obesity, being overweight, altered sleeping patterns, taking other substances, etc.) and psychological (depression, alterations to mental development, conduct problems, etc.) terms. What is striking with all these problems is the changes that take place in youths’ sleeping and eating habits. On the one hand, sleeping habits are altered because most of the time that youths spent on sleeping and resting, they now spend on technologies. So they do not rest enough and sleep-related problems, such as poor academic performance and social relations. As previously mentioned, sleeping less than 5 hours is one of the alarm signals which indicates that youths spend too much time using these technologies. On the other hand, the type of foods they eat also changes, and their life becomes more sedentary as they spend too much time using ICT. Spending so many hours watching screens means investing less time in other healthier entertainment activities, and even sitting using devices is often associated with eating unhealthy food, like sweet or junk food. Such habits imply higher obesity and overweight rates in youths, and now there is talk about “digital obesity” and the higher risk of suffering cardiovascular problems.^{9,10}

Nowadays according to the generation gap, adults are often unaware of the repercussions that bad technologies use can have on their children, which demonstrates that this problem is of much interest and a concern for today’s society.

The objective of this literature review is to know the impact of addictions to new technologies and their excessive use on youths' sleeping and eating habits.

2 METHODOLOGY

This literature review was conducted by following the recommendations set out in PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) ¹¹ to conduct literature reviews, with slight changes and suitable adaptations to the present work.

The inclusion criteria were full-text articles in English or Spanish published in the last 10 years whose study population fell in the 8-26 years age group and had dealt with the relation between abuse or addiction to new technologies and these subjects' sleeping and eating habits. Any studies that had related addiction to other health problems were excluded.

2.1 Bibliographic search

Twelve articles that met the above-cited requirements on excessive use or addiction to new technologies in relation to sleeping and eating habits were analysed.

The main media used to select articles were databases Plinio and Pubmed. With them, access was gained to other bibliographic resources, such as Scielo, ProQuest and Wiley Online Library. Searchers were also made in other sources, such as journals Oxford Academy, Cambridge University Press or Redalyc (Network of Scientific Journals from Latin America, the Caribbean, Spain and Portugal).

To search for studies, key words were used as free language "adicción a las nuevas tecnologías/adicción internet", (addiction to new technologies/internet addiction) "nuevas tecnologías y hábitos alimentarios" (new technologies and eating habits), "nuevas tecnologías y hábitos de sueño" (new technologies and sleeping habits). Booleans AND and OR were also used to link and combine the different terms used for searches. These terms were "Internet" (Internet) OR "Nuevas tecnologías" (new technologies), to which new ones were added, such as "Hábitos alimentarios" (eating habits), "Hábitos de sueño" (Sleeping habits), "jóvenes" (young people).

2.2 Selecting studies

After conducting the first bibliographic search in the various databases and journals, 101 full-text articles were found. After reading their title, 22 were ruled out as they were repeated. Of the 79 articles remaining after reading their titles and abstracts, 48 were ruled out for not fulfilling the objective of this literature review. Nineteen other articles were eliminated as they did not meet the inclusion criteria after reading the whole text. Therefore, 12 articles remained to be analysed for the present literature review. A flow chart was created to show how the search for studies was done and how the included studies were selected.

3 RESULTS

3.1 The main characteristics of the selected articles

The selected studies were classified into two different groups. On the one hand, those studies that related technologies with sleeping habits and, ¹²⁻¹⁸ on the other hand, how they related with eating habits ¹⁹⁻²². Moreover, one of the selected studies showed a relation with both these variables ²³. All the articles were published in journals indexed in Journals Citation Reports (JCR). Most were published in journals related to Health Sciences, public health ^{13, 19, 23}, psychology ¹⁷⁻¹⁸, neuropsychiatry ^{12, 14}, paediatrics and adolescence ^{15, 21}, and in journals that are specifically related to sleep ¹⁶ and nutrition ^{20, 22}.

All the selected studies were descriptive, 10 were cross-sectional ^{12-14, 17-23} and two were longitudinal ¹⁵⁻¹⁶. Three were conducted in Europe, ^{15, 19, 21} one in France ¹⁵, one in Spain ¹⁹ and the other in 10 European cities ²¹ simultaneously: Athens (Greece), Heraklion (Greece), Dortmund (Germany), Pécs (Hungary), Rome (Italy), Ghent (Belgium), Lille (France), Stockholm (Sweden), Vienna (Austria) and Zaragoza (Spain). Four studies were conducted in Asia as follows: South Korea ^{14, 22}, Turkey ¹² and Taiwan ¹⁶. Three studies were done in America, two in Mexico ¹⁷⁻¹⁸ and one in Canada ²⁰. Finally, studies had been conducted in the Middle East in the Lebanon ¹³ and Iran ²³.

The earliest studies were published in 2009¹⁴ and 2010²², and the most recent work was published in 2018²³. All the rest were published between 2012 and 2016^{12-13, 15-21}.

The studied population included children, adolescents and young adults (8-26 years) because technologies are widely used in all these life stages. Of all 12 selected studies, only four did not include people aged over 18^{16, 21-23}. Regarding gender distribution in them, most included a proportion that came close to 50% for both genders, except one which indicated that the proportion of females was 30%, which was considerably lower than that for males¹³. Their sample sizes vastly varied. The article with fewer participants had 93 young people¹⁷, while that with the largest analysed sample size had 9,858 subjects²⁰. In all, 22,889 children and youths were included.

Data collection was mainly performed at schools^{12, 17-21, 23} using questionnaires that were completed in class in school time with a research team member present to solve any doubts. In other cases, questionnaires were taken home because families had to complete a section^{14, 16} or the study was longitudinal and notes on information had to be made every day¹⁵⁻¹⁶. Only one study collected data by holding a personal interview with the participant,¹⁴ while another study²² did not specify where data were collected.

3.2 Evaluating the use of technologies

The selected articles studied youths' use of different technologies. The most widely analysed use was the Internet, a tool that can be found in almost any electronic device (PC, mobile phone, tablet, TV, etc.). In this case, use was measured by the Internet Addiction Test of Young^{12-14, 23}, the Internet Addiction Scale of Chen¹⁶ or another scale to diagnose Internet addiction²². In one case¹³, apart from questionnaires, researchers created other surveys with questions about Internet use. Other studies^{17,18,20} not only analysed Internet use, but also studied the use of social networks by young people.

One study¹⁵ analysed Internet access at home and having electronic devices in the interviewed person's bedroom. The other studies^{19, 21} resorted to a questionnaire to identify participants' sedentary lifestyle and activities using screens, e.g., PCs, TV, video games or mobile phones, as sedentary conduct.

3.3 Evaluating sleeping habits

The aim of the questionnaires that these studies conducted was to know sleep quality and to detect possible sleep problems. In most studies^{12,16-18}, participants had to complete a questionnaire devised by the authors about their sleeping habits, which collected data on youths' sleep characteristics and different sleep-related problems that those interviewed could have^{12, 14}. In one study,¹⁶ participants kept a sleep diary with information they entered every day about their sleeping habits.

Other studies collected more specific data, such as levels of daily sleepiness using the Epworth Daily Sleepiness Scale^{14, 17-18}, or the Karolinska Sleepiness Scale,¹⁵ or insomnia with the Insomnia Severity Index¹³ and sleep quality with the Pittsburgh Sleep Quality Index²³.

3.4 Evaluating eating habits

Of the five articles that investigated the relation between using new technologies and eating¹⁹⁻²³, the body mass index (BMI) of the participants was obtained in four^{19-21, 23}. Eating patterns were also analysed. Some studies investigated eating habits with the Diet Evaluation Tool²³, the Food Frequency Questionnaire²⁴, the Food Conditions Questionnaire²³ or using the scales that the researchers of each study created^{19, 23}. Others asked for more specific data, such as drinking sugary and energy drinks²¹ or not eating breakfast in the morning¹⁹⁻²⁰.

3.5 Using new technologies and how they impact sleeping and eating habits.

We then separately analysed the results obtained about the influence of ICT on the participating youths' sleeping and eating habits.

3.5.1 *Sleeping habits*

Of all the analysed studies, eight^{12-18, 23} investigated the use of different technologies and their influence on sleep.

All the studies coincided in the fact that using these devices interfered with sleeping patterns in one way or another. Some studies¹⁴⁻¹⁸ stated that prolonged use of these technologies made youths more likely to suffer sleepiness in the morning, and confirmed that the likelihood of suffering daytime sleepiness was 5.9-fold higher in Internet addicts than in non-addicts¹⁴. The use of ICT was also associated with less quality sleep^{12,14-18,23} and with going to bed later at nighttime.¹⁵⁻¹⁸ They even stated that the more time spent on using electronic devices, the later bedtime was ($p=.003$), which implies irregular sleeping habits¹⁷. Another study¹³ also significantly related the use of ICT with insomnia ($p<0.00001$).

One study¹⁴ investigated sleep-related problems like snoring, apnoea and grinding teeth (these data were provided mainly by family members), and showed that the presence of such problems was significant ($p\leq 0.05$) in young Internet addicts.

3.5.2 Eating habits

The studies¹⁹⁻²³ investigated the relation between using ICT and unhealthy eating habits. They indicated that those youths who spent more time using ICT, watching TV, or using the Internet or playing video games were more likely to eat unhealthy foods,¹⁹⁻²³ and corroborated that they tended to eat and drink more energy drinks²⁰, sugary drinks^{20, 21}, salty snacks²¹⁻²² and fast food²³. They also mentioned a significant dose-response association ($p<0.01$) of using technologies and eating these food types²⁰. They stated that a significant relation also existed between using electronic devices and not eating breakfast¹⁹⁻²⁰ before leaving home or not eating supper²².

Some studies^{21, 22} related Internet addiction and less appetite ($p=0.001$), eating smaller meals ($p=0.019$) and eating bits of food more than 3 times a day, and also eating more fats, fried food, salt and sugar²². They also mentioned a significant relation between ICT use and eating fewer healthy food like fruit²¹⁻²², vegetables, dairy products, meat and fish,²² and stressed poor quality diet for habitual users of these technologies ($p<0.05$)²².

However, no clear relation came over between using electronic devices and being obese/overweight. These studies^{21, 23} stated that those who spent more time performing sedentary activities with screens would be more likely to be overweight/obese, while some¹⁹⁻²⁰ stated that they had not found any significant relation ($p\geq 0.05$) for this problem.

4 DISCUSSION

The present literature review aimed to know if a relation existed between abuse or addiction to new technologies and sleeping and eating habits. The data analysis indicated that those individuals who spent longer using ICT, regardless of it being the Internet, mobile phone, video games or TV, had worse sleeping habits than those who spent less time using ICT. Another relation was found between using technologies more and eating a diet made up of unhealthy foods, like sugary drinks or junk food, and eating fewer healthy foods like fruit and vegetables, and evening skipping meals during the day. After analysing these studies however, no clear relation came over between excessive ICT use and being overweight/obese.

Our analysis included those studies that investigated sleep and the impact of using ICT on it, and found that sleep was affected by improper ICT use. This was also the case of one study²⁴, which demonstrated a closer relation between using social networks and their impact on sleep as it revealed that abusing social networks increased the possibility of brusquely awakening and problems going to sleep by 3-fold.

Other studies²⁵⁻²⁶ concluded that three mechanisms existed that could cause these sleep problems. The first one was found by studying the effects of blue light on people immediately before they fell asleep. Blue light is that which electronic devices shine. This light has physiological effects on humans as it can alter their circadian cycle. This happens because it slows down or suppresses the secretion of melatonin, the hormone in charge of regulating the circadian cycle of sleep. This means that it increases the time it takes us to fall asleep. Moreover, the more intense the device's blue light and the shorter the distance the screen is from eyes, the more melatonin suppression is. The second mechanism was the activation that such devices produce as they can delay the time people go to bed. This increased alert state could also be related with the light a screen emits, or could simply be due to the excitement of activity felt when using such devices, e.g. playing a game, watching a video or holding an entertaining conversation. All this hinders the relaxation level required to fall asleep. Finally,

another mechanism involved youths delaying sleep time by spending too much time using these devices, which meant they slept fewer hours.

When we analysed the results, we found that using ICT was significantly related to unhealthy eating habits. There may be several factors to explain this, and one has to do with the food that young people choose. Indeed some studies²⁷⁻²⁸ stated that a significant relation was found between watching adverts for certain food on these devices and the food choices made by young people. They concluded that youths often chose the unhealthiest food types after watching TV ads. Furthermore, young people often skip meals in the daytime, which is justified by the time they spend using these technologies. This means they have less time to eat and tend to eat bits of food during the day, which gives way to them skipping a meal. These are some of the causes to help explain this relation, although there is still much to be studied.

Apart from mentioning eating habits, some studies^{19-21, 23} also obtained BMI data from their young participants to compare their relation with ICT. The analysed results showed no clear relation between these variables (BMI and abusive ICT use) because two indicated a significant relation^{21, 23} and two others did not^{19,20}. When considering the variable BMI, one study²⁹ observed a significant relation between abusive Internet use and addiction and being overweight/obese in a sample of 10,287 adolescents aged 14-17 years in seven European countries, including Spain.

4.1 Study limitations

The studies selected for this literature review employed different scales to evaluate the use of technologies and sleeping/eating habits. For example, some studies used scales or questionnaires designed by the researchers themselves, and the results obtained using the different variables obtained in the analysed studies could not be compared.

4.2 Implications for practice in health sciences

This theme is believed to be particularly interesting from the nursing care viewpoint given the large number of problems that can emerge from ICT abuse and addiction. Apart from the problems analysed in the present review, such as inappropriate sleeping and poor eating habits, and being overweight/obese, we also find that not properly using these technologies can have other consequences like eyesight and postural problems, depression, poor academic performance, school absenteeism or psycho-social problems, among others. These problems are, in turn, the consequence of many other problems.

As negative ICT use entails so many consequences, it is essential to prevent such conducts by educating young people about how to correctly use ICT and in the same line as other addictions like alcohol or drugs. These prevention strategies could be adopted from schools by teaching small children how to avoid these problems as much as possible in the future. Another relevant line of action could be taken by nursing professionals by them counselling parents on suitably using ICT as they are often unaware of this use. This could be done during talks or meetings with parents, when any doubts about ICT can be cleared up, while also teaching parents the alarm signals that indicate possible ICT abuse. Some prevention strategies to help parents avoid problems with ICT appearing could be: limit the time their children spend using these technologies, agree with children on the times they can use them, encourage other types of healthier entertainment, avoid sedentary activities as much as possible, and do not use electronic devices before going to bed and at mealtimes.

It would be interesting for healthcare professionals to continue studying how ICT abuse influences the sleeping and eating habits of children, adolescents and young adults. It is vital to know how young people use ICT to prevent abuse and addiction conducts with such technologies appearing as they are affordable and influence the lives of people, who can form inappropriate habits that create health problems.

5 CONCLUSIONS

This literature review has found that using new technologies negatively influences young people's sleeping and eating habits.

Possessing and incorrectly using electronic devices influence their sleeping habits because they are associated with less quality sleep and they go to bed later at night.

Moreover, the time they spend using ICT impacts their eating habits. The young people who abuse these devices eat unhealthily and do not stick to suitable diets for their age.

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