

THE FREQUENCY OF USING SCREEN-BASED MEDIA AMONG CHILDREN AND ADOLESCENTS AND ITS IMPACT ON HEALTH-RELATED BEHAVIORS

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Screen-based media are becoming an increasingly important part of life for today's children and adolescents. That is why our purpose was to review the literature published within the past 10 years regarding the use and impact of TV, video game, and computer /Internet on youth health outcomes including how they affect their psychosocial outcomes and physical well-being.

Systematic literature search for and analysis of a variety of media used by children and adolescents from a public health perspective was done. Literature was reviewed from May to July 2014.

Children and adolescents spend a great deal of time using screen-based media. This high overall electronic media use was associated with poorer behavior and health status. A large part of this younger generation's social and emotional development is occurring while on the Internet and on cell phones. Screen-based media use was mutually associated, and the plural use of these media had stronger associations with unhealthy lifestyles and subjective health complaints. Various physical complaints, like obesity, back-ache and headache, neck-shoulder pain, and sleep disorders were also found significant. Children and adolescents are consumers, but also they are producers of social media.

Public health professionals and society as a whole should increase health education on screen-based media consumption, by stimulating reasonable use and teaching youth to be critical.

Parents can be most helpful if they understand the core issues and have strategies for dealing with them. *Acta Medica Medianae 2015;54(3):64-73.*

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Introduction

Screen-based media is becoming an increasingly important part of life for today's children and adolescents. The general term "screen-based media," as used by Marshall, Gorely and Biddle refers to television, computer, and video games (1). In today's era of technology development there is an exponential growth in the wireless and Internet communications. Young people quickly go from one technology to another, or to its more advanced form.

Although children might still spend more time watching television than using computers, most children now have access to home computers and are using them for everything – from playing games, chatting with friends or surfing the Web, to doing schoolwork. With the increased screen-based behaviors, concerns have arisen about its effects on the health and well-being of children and adolescents. For example, a number of studies have found that the time spent on home computers or engaging in similar sedentary activities may displace other activities that have more developmental value (2, 3).

Parents usually buy home computers and subscribe to Internet access to provide educational opportunities for their children and to prepare them for the "information age." Although they are increasingly concerned about the influence of the Web on their children and are disappointed with some of the online activities their children engage in - such as games and browsing the Internet to download lyrics of popular songs and pictures - parents generally view computers favorably, and

even consider children without home computers to be at a disadvantage (4).

Research to date suggests that excessive television watching is associated with negative effects on sleep, attention, and interpersonal relationships (5, 6). A strong association between spending prolonged hours on the computer or TV, and fast food eating, poor lifestyle habits and low vision has been documented (2, 7).

Viewing television and playing video games are claimed to be associated with increased subsequent attention problems in childhood, and similar association among television, video games, and attention problems exists in late adolescence and early adulthood (8).

The real question is how do these things affect the health, emotional and social aspects of children and young people? Does spending more time on screen-based activities mean they will be less physically or socially active? How much is too much and how do we measure this? Can negative effects be avoided and how to enhance positive ones? Is there a bit of exaggeration with the warnings, just because only 20 years earlier something like this would have been unthinkable?

Nevertheless, adolescents today grow up in a world saturated with the mass media. In general, the media depict a world in which unhealthy behaviors such as physical aggression, unprotected sex, smoking, and drinking are glamorous and risk-free (9). There is a considerable research to prove concerns about media violence, the impact of media on teen sexual attitudes and behavior, the relationship between alcohol and cigarette advertising and adolescent drug use, but very little research exists con-

cerning adolescents' use of the Internet and the potential behavioral impact (10).

Children learn behaviors and have their value systems shaped by media. The newer forms of media have not been adequately studied, but concern is warranted through the logical extension of earlier research on other media forms and the amount of time the average child spends with increasingly sophisticated media (11).

Therefore, the main purpose of this study was to systematically review the literature about the quantitative effects of television and video watching, video game playing, and computer and Internet use on youth health outcomes including how they affect children's and adolescent social outcomes, psychological and physical well-being.

Methods

The purpose of this review was to systematically approach data relevant for analyzing health-related behaviors of children and adolescents regarding the screen-based media use. We applied the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (12) reporting criteria as far as was possible in the studies that were not a systematic review or meta-analysis of empirical studies.

A literature search and identifying relevant studies

A literature search on screen-based media studies was performed in multiple electronic bibliographic databases from January 2004 to July 2014, including: PubMed, EMBASE, Psych-INFO, and

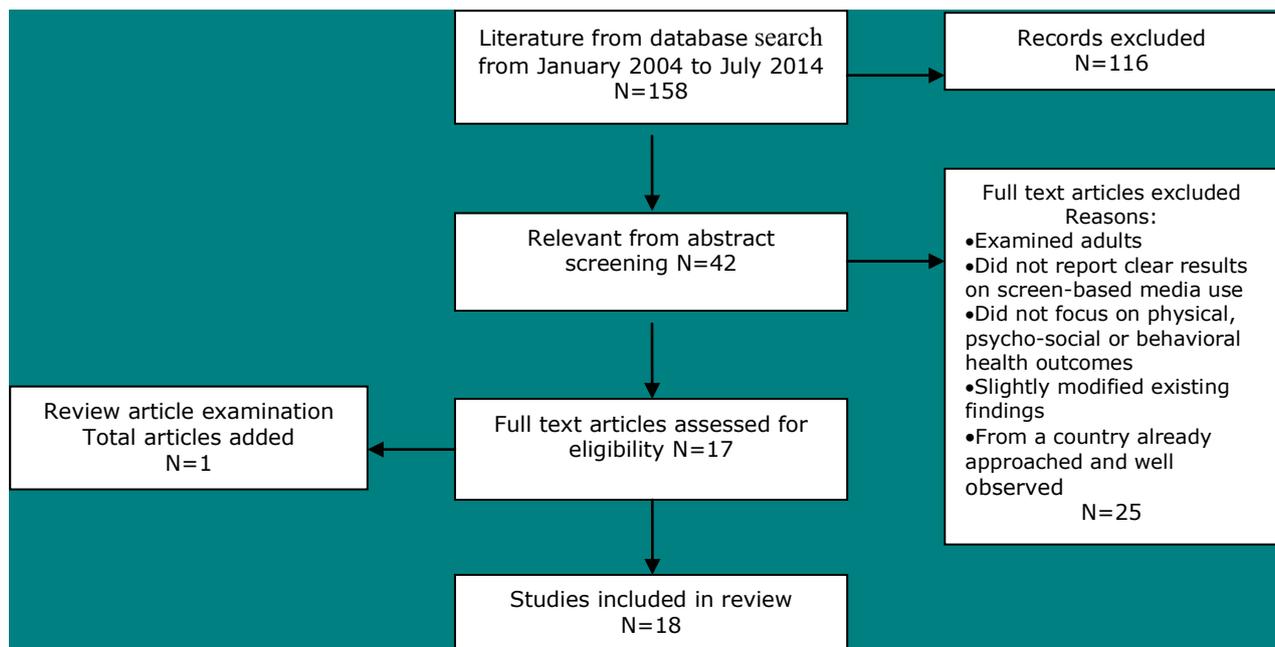


Figure 1. Flow chart of study selection through the phases of the review

Google Scholar. The search terms used in combination included "screen-based media" OR "media impact" AND "well-being" OR "health-related behaviors" AND "children" OR "adolescents" OR "teen-agers".

The search was not limited geographically or to English language publications. In addition, we conducted manual reviews of the citations in the relevant articles. The contents of identified 158 abstracts were reviewed independently by all the authors to determine whether they contained data on screen-based media impact on children's and adolescents' well-being. For many countries of interest, only one study was available. When there was more than one study for any country, the most recent study was more comprehensive than the previous studies in all cases. eighteen theoretical and empirical full-text articles were included in the analysis phase of the review.

To reduce the chance of missing important articles that did not fit the inclusion criteria, a descendent search was conducted and one review article was added in order to assess the most relevant data published before 2004, as illustrated in Figure 1.

Inclusion and exclusion criteria

The articles were considered eligible if they dealt with the impact of new media technologies on children or adolescents, public health concerns of media use and issues of well-being connected with extensive use of new media. The studies that did not focus on health-related outcomes, which were published before 2004 or just cited, or slightly modified existing findings and reviews already published were not included.

Data extraction and synthesis

Key study characteristics of the identified studies were extracted, including: study design, size and source of study population, country of origin, type of media use, and health domain. Data were synthesized into one table (Table 1.) A narrative review and a descriptive analytical method were used to extract data on psychological, social and physical outcomes and associated factors (13).

Results

Out of 42 identified titles, 18 theoretical and empirical full-text articles were included in the analysis phase of the review (Figure 1). The included articles' publication year ranged from 2004 to 2014 and descriptive characteristics of these studies are outlined in Table 1.

The frequency of using screen-based media

Public perception is that children and adolescents spend a great deal of time online.

For example, American children and adolescents used to spend an average of 3-5 hours per day

with a variety of media, including television, radio, videos, videogames, and the Internet (10). Nevertheless, a longitudinal field study by Jackson et al. (14) at Michigan State University (2006) designed to examine the antecedents and consequences of home Internet use in low-income families indicated that African-American children and younger children used the Internet less than did European-American children and older children, respectively. In fact, the children who came from lower-income families spent only about 30 minutes per day online, logging in only once. Also, their use of the Internet for communication was rare - those children sent less than 1 e-mail a week (14). Therefore, more precise estimates varied from as high as several hours a day to as low as 3 hours a week, depending on how and where Internet use was measured.

An Australian school-based population study by Mathers et al. (15) showed that adolescents spent, on average, 3 hours 16 minutes per day using electronic media (television - 128 minutes per day; video games - 35; computers - 19; cell phone - 13 minutes). A cross-sectional study of teenagers from schools in six towns in Cantabria (Spain, 2005) by Bercedo et al. (16) showed that teenagers watched television for an average of 3 hours per day. They played games consoles for an average of 48 min per day and used the Internet for an average of 54 min per day. Most of the teenagers had a mobile phone and mobiles were mainly used for sending messages. Most surfed the net, but boys preferred surfing and downloading games, while girls preferred chatting and sending e-mails. Nearly two-thirds of teenagers had a video console. Boys preferred video games with shooting, fights, sports and driving, while girls preferred adventure video games (16).

A longitudinal study from 27 schools in the Helsinki region of Finland (17) showed that school-aged children used a computer for one hour per day and watched TV over one hour a day in 2006. Nakamura et al. (18) conducted a cross-sectional school-based population survey in 2009 in elementary schools in urban parts of Japan. According to them, the use of games, the use of television, and the use of personal computers were mutually associated. The time spent playing games was significantly less in girls than boys ($p < 0.001$). In addition, children in older grades spent more time using TV and PCs than children in younger grades (18).

The data for the cross-sectional survey of Patriarca et al. (19) were collected from children and adolescents aged 11 to 16 years randomly selected from a sample of 5 public schools in the geographic area of the Campania region (Italy, 2009). The overall mean length of time daily spent on television viewing (2.8 hours) and the frequency of watching for at least two hours per day (74.9%) were significantly associated with older age; they always ate lunch or dinner while watching television, spent more time playing video-games and using computer. Those with parents from a lower

Table 1. Characteristics of studies included in the review

Article	Study design	N	Target population	Country	Media use	Health domain
Bener et al. 2010	Cross-sectional	2.467	Schoolchildren aged 6-18	State of Qatar	TV, games, PC/Internet	Physical (Low vision)
Bercedo et al. 2005	Cross-sectional	884	Adolescents 14-18	Spain	TV, games, PC/Internet, cell phones	Psychosocial
Bucksch et al. 2014	Cross-sectional	16.918	Children and adolescents 11, 13 and 15	Germany	TV, PC	Physical
Casiano et al. 2012	Cross-sectional	9.137	Adolescents aged 12-19	Canada	TV, games, PC/Internet	Psychosocial, physical
Davison et al. 2006	Longitudinal	169	Girls at age 7, 9 and 11	USA	TV	Metabolic risk, obesity
Ekelund et al. 2006	Cross-sectional	1.921	Children aged 9-10 and 15-16	Denmark, Estonia, Portugal	TV	Physical (Metabolic risk, obesity)
Hancox et al. 2004	Longitudinal	1.000	5-15 and up to age 26 years	New Zealand	TV	Physical, social
Iannotti et al. 2009	Cross-sectional	49.124	Children and adolescents 11, 13 and 15	North America, Europe	TV, PC/Internet	Physical, psychosocial
Jackson et al. 2006	Longitudinal	140	Children 10-18 Mean age 13.8	USA	PC/Internet	Social (academic performance)
Li et al. 2007	Cross-sectional	19.299	Children Mean age 9.0	China	TV, PC/Internet	Physical, behavioral (sleep disorders)
Marshall et al. 2006	Systematic review	539 indepen. samples	Youth ≤18 years	90 studies from 1949 to 2004	TV, games, PC/Internet	Psychosocial
Mathers et al. 2009	Cross-sectional	925	Adolescents Mean age 16.1	Australia	TV, PC, games, cell phones	Psychological, physical
Nakamura et al. 2012	Cross-sectional	3.464	School-aged children 10-12	Japan	TV, games, PC/Internet	Lifestyle, subjective health
Nuutinen et al. 2013	Longitudinal	353	School-aged children 10-11	Finland	TV, PC/Internet	Sleeping behavior
Patriarca et al. 2009	Cross-sectional	1.034	Children and adolescents aged 11 to 16	Italy	TV, games, PC/Internet	Social, physical
Silva et al. 2014	Longitudinal	5.028 at baseline	High school students 15-19 years	Brazil	TV, games, PC/Internet	Social
Swing et al. 2010	Longitudinal	1.323 and 210	Mean age 9.6 and 19.8	USA	TV, video games	Psychosocial (attention problems)
Van den Bulck 2004	Cross-sectional	2.546	Adolescents Mean age 13.2 and 16.4	Belgium	TV, games, PC/Internet	Sleeping behavior

socio-economic background were also more likely to spend more minutes viewing television. Two-thirds played videogames for 1.6 hours daily and more time was spent by those younger, males, with parents that do not control them, who watched more television, and who spent more time at the computer. The computer was used by 85% of the sample for 1.6 hours daily and those older, with a computer in the bedroom, who watched more television and played videogames were more likely to use the computer (19). This survey responses indicate an inordinately high amount of time spent in viewing TV with an exposure of 2.8 hours per day. Earlier studies showed similar values with 3.1 hours in children in the United States (20), 3.13 hours per weekday in New Zealand (21), and 3-3.57 in girls and boys in Belgium (22). However, substantially

lower exposure was reported with 1.9 hours per day in boys and girls from three regions in Europe (23), 1.91 in girls at the age of 11 in the United States (24), and 2.2 in children 11-14 years old in France (25). Multivariate analyses in the study of Patriarca et al. (19) provided evidence of strong interrelations among several behaviors: the frequency of TV viewing was positively associated with the increased frequency of playing videogames and using computers.

The systematic review of Marshall et al. (1) consisting of ninety studies published in English language journals between 1949 and 2004, and presenting data from 539 independent samples to estimate the prevalence and dose of television viewing, video game playing and computer use among youth (≤18 years), suggests that youth view on

average 1.8-2.8 h of TV per day, depending on age and gender. Boys and girls with access to video games spend approximately 60 and 23 min per day, respectively, and computer use accounts for an additional 30 min day. For children with access to a television set, the number of hours spent viewing does not appear to have increased over the past 50 years (1).

In order to compare the prevalence of TV watching and of computer/videogame use among high school students from Southern Brazil between 2001 and 2011 and to identify associated socio-demographic factors, Silva et al. (26) conducted panel studies and have found that:

Prevalence of ≥ 2 h per day of TV watching dropped from 76.8 to 61.5% and ≥ 2 h per day of computer/video game use increased from 37.9 to 60.6%. In both surveys, those aged 15-16 and those who did not work had higher likelihoods of being exposed to ≥ 2 h per day of TV watching. Boys, those with higher family income, and those who were living in urban areas had higher likelihoods of ≥ 2 h per day of computer/video game use. Older age, studying at night and not working were protective factors to these behaviors (26).

In the cross-sectional German Health Behavior in School-aged Children (HBSC) study, Bucksch et al. (27) found a strong increase in PC use for non-gaming purposes over time for girls (only), with a difference between 2002 and 2010 of 54.1 min/weekday and 68.8 min/weekend day ($p < 0.001$). This was mainly due to a marked increase in use of a PC for chatting on-line, internet, emailing, homework etc. among girls during the last ten years which outweighs the corresponding decrease in TV viewing (for both boys and girls; p for trend < 0.01) (27). For physical activity, they found a slight statistically significant increase.

Impact on psychosocial and physical well-being

According to Mathers et al. (15), high overall electronic media use is associated with poorer behavior, health status, and HRQL (Health-Related Quality of Life). Associations with duration of specific media exposures are mixed; there is a favorable association between computer/Internet use and psychological distress, whereas high video game use is associated with poorer health status, behavior and depression or anxiety. TV watching and mobile telephone use were not associated with any outcome measure (15).

According to Nakamura et al. (18), the use of games, television, and personal computers was significantly associated with lifestyle and subjective health. In addition, the use of games, the use of television, and the use of personal computers were mutually associated. The larger the number of media used for more than 1 hour the higher the odds ratio of the association of media use with unhealthy lifestyle and subjective health complaints was. The plural use of these media had stronger associations with

unhealthy lifestyle and subjective health complaints (18).

Multiple logistic regression analyses were conducted with participants aged 12-19 in the provinces and territories of Manitoba - derived from the Canadian Community Health Survey 1.1 (standardized in-person interviews in 2001 by Statistics Canada) to determine the association between hours of use of television/videos, video games, and computers/Internet, and health outcomes (28). The findings included:

Obesity was associated with frequent television/video use. Depression and risky sexual behavior were less likely in frequent video game users. Binge drinking was less likely in frequent users of video games and computers/Internet. Alcohol dependence was less likely in frequent computer /internet users. Therefore, most health outcomes, except for obesity, were not associated with using media in youth (28).

Another previous study (29) suggested that increased times spent on viewing television and using computer were associated with increased prevalence of overweight only among girls. However, playing digital games was not related to overweight, perhaps by virtue of game playing being less sedentary or related to a different lifestyle than viewing television and using computer.

Computer use and television viewing predicted significantly shorter sleep duration and later bedtimes (17). Screen-based media may increase physiological and mental arousal, which makes it difficult to fall asleep (30). In addition, computer use or TV viewing may actually affect the sleep architecture by, for example, decreasing slow-wave sleep, REM-sleep, and sleep efficiency (30, 31), or the bright light of a television or computer screen may suppress melatonin secretion, which in turn may delay the onset of sleep (8). Many cross-sectional studies have reported associations between computer use, TV viewing, and sleep habits among school-aged children (32-35). However, not all of the studies have shown significant associations; for instance, between television viewing and reduced sleep duration (7, 34, 36).

The presence and daily use of media in a child's bedroom was the predominant risk factor for children's sleep/wake patterns, duration of sleep and sleep disorders (34). Also, according to Hakala et al. (37), daily use of computers exceeding 2-3 h seems to be a threshold for neck-shoulder pain and exceeding 5 h for low back pain in adolescents. In fact, frequent computer-related activities may explain the increase of these symptoms in the 1990s and the beginning of 2000 (37). Another study from Torsheim et al. (38) found that computer use, computer gaming and TV viewing contributed uniquely to prediction of weekly backache and headache among adolescents from the Nordic countries. The observed associations indicate that time spent on screen-based activity is a contributing factor to physical complaints among young people, and that effects accumulate across different types of screen-based activities (38). Self-reported psychological

and social health indices were negatively related and negative health indices such as health complaints and tobacco use were positively related to screen-based media (with a few exceptions) (2).

Hancox et al. (39) assessed approximately 1.000 unselected individuals born in Dunedin, New Zealand, in 1972-73, at regular intervals up to the age of 26 years (a longitudinal birth cohort study). They used regression analysis to investigate the associations between earlier television viewing and body-mass index, cardio respiratory fitness, serum cholesterol, smoking status, and blood pressure at age 26 years. Average weeknight viewing between ages 5 and 15 years was associated with higher body-mass indices, lower cardio-respiratory fitness, increased cigarette smoking, and raised serum cholesterol in their age of 26 years. Childhood and adolescent viewing had no significant association with blood pressure. These associations persisted after adjustment for potential confounding factors such as childhood socioeconomic status, body-mass index at age 5 years, parental body-mass index, parental smoking, and physical activity at age 15 years (39).

Few studies and inconsistent findings render uncertain whether using the Internet has any influence on children's social outcomes. On the one hand, time spent online is the time not spent elsewhere, including participating in social activities and communicating with family and friends. On the other hand, the Internet facilitates communication with geographically distant family and friends, and makes it easier to communicate frequently with those nearby (4). The number of close friends and the amount of their time spent with family, friends and extra-curricular school activities remained the same over time and was uninfluenced by Internet use (40, 41). How children allocated their time did change over time but these changes were unrelated to Internet use. The Internet's social impact may depend on using these tools to build new relationships and/or strengthen existing ones. Social impact may also depend on personal and situational factors (4, 14). Alternatively, it may be that Internet use has no social impact. Like media that have preceded it (e.g. books), the Internet may be seamlessly integrated into people's ongoing lives. Jackson et al. (14) found out that children who used the Internet more had higher grade point averages and standardized test scores in reading than did children who used it less, but the Internet use had no effect on standardized test scores of mathematics achievement. No gender differences and no effects of age were noted in the Internet use (14). Few studies also indicate that children who play computer games can improve their visual intelligence skills - skills that may provide them with "training wheels" for computer literacy (41).

The mass media have been shown to affect a broad range of adolescent health-related attitudes and behaviors including violence, eating disorders, and tobacco and alcohol use (5, 7, 9). Also, the relationship between exposure to aggression in the

media and children's aggressive behavior is well documented (42, 43). Certain youth are more vulnerable to violent media messages and images (44). One largely unexplored factor that may contribute to adolescents' sexual activity is their exposure to different type of media (45).

Discussion

This is a computerized world and the children who use computers and the Internet will better manage to fit in. Widely accessible new communication technologies may also lower social and cultural barriers associated with socioeconomic disadvantage.

How do media affect children and adolescents?

Media affect youth not only by displacing time they spend doing homework, in social engagement, physical activity or sleeping but also by influencing beliefs and behaviors. According to social learning theory, children and adolescents learn by observing and imitating what they see on the screen, particularly when these behaviors seem realistic or are rewarded (46). Cognitive development theory asserts that children's cognitive capacities at different stages determine if and how they understand media content. In addition, media present youth with common "scripts" for how to behave in unfamiliar situations such as romantic relationships (47).

Using social media Web sites is among the most common activity of today's children and adolescents. Any web site that allows social interaction is considered a social media site. Such sites offer today's youth a portal for entertainment and communication and have grown exponentially in recent years. Public health workers ought to encourage healthy use and urge parents to monitor for potential problems. Children and adolescents nowadays are consumers but also are producers of social media.

Benefits and risks

Engaging in various forms of social media is a routine activity that researchers have shown to be beneficial to children and adolescents by enhancing communication, social connection, and even technical skills (48). Thus, a large part of this generation's social and emotional development is occurring while on the Internet and on cell phones (49).

Social media sites allow teens to accomplish online many of the tasks that are important to them offline: staying connected with friends and family, making new friends, and exchanging ideas. Many parents today use new technology very well. Nevertheless, some parents may lack a basic understanding of these new forms of socialization, which are integral to their children's lives (10). In addition, these parents often lack a basic under-

standing that kids' online lives are an extension of their offline lives.

But, researchers also have "diagnosed" a new phenomenon called "Facebook depression," defined as depression that develops when teens spend a great deal of time on social media sites, such as Facebook, and then begin to exhibit classic symptoms of depression (50, 51). Acceptance by and contact with peers is an important element of adolescent life even in the online or virtual world.

The role of public health workers

Parents can be most helpful if they understand the core issues and have strategies for dealing with children and adolescents whether they take place online or offline.

Some specific ways in which public health workers can assist parents include:

a) Advise parents to talk to their children and adolescents about their online use.

b) Promote ideas that parents need to work on their own participation gap in their homes by becoming better educated about technologies their youngsters are using (52).

Public health professionals need to become educated about the public health risks of media (53). By understanding and supporting media education, public health professionals can play an important role in reducing harmful effects of media on children and adolescents.

The American Academy of Pediatrics recommends that children should have less than 2 hours of screen time per day (54). Advice to parents should include the following: to emphasize alternative activities, to encourage a careful selection of programs to view, then to limit and focus the time spent with media and also to be good media role

models - because children often develop their media habits on the basis of their parents' media behavior (55). More than 50 years of media research attests to the significant influence of media on child and adolescent health (56). Both "old" media (television, movies, magazines) and "new" media (the Internet and social networking sites, video/computer games, cell phones) can have an impact on virtually every health concern that health practitioners and parents have about young people (10). Despite the evidence of potential harm, there is also evidence that media can be beneficial for youth, by increasing empathy and acceptance of diversity through modeling of prosocial behaviors (57) and developing children's early literacy skills through educational programming (58).

Conclusion

As use of different media formats escalates, research across multiple specialties will need to incorporate evaluation of media use into its assessments (5). In our increasingly technologically-driven world, the use of media will undoubtedly continue to rise, but media use is not universally harmful.

After all, no excessive activity is good. Public health professionals and society as a whole should increase health education on screen-based media consumption, by stimulating reasonable use and teaching young people to be critical.

The screen-based media have become everyday needs in learning and communication for youth. However, with the many advantages that new media technologies provide youth, there are certain physical, social and psychological risks that public health workers had to prevent. Further research will assist in identifying key risk factors.

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UČESTALOST KORIŠĆENJA ELEKTRONSKIH MEDIJA MEĐU DECOM I ADOLESCENTIMA I NJIHOV UTICAJ NA ZDRAVSTVENO PONAŠANJE

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Elektronski mediji postaju sve važniji deo života današnje dece i adolescenata. Cilj ovog rada bio je da prikaže pregled literature objavljene u poslednjih deset godina na temu upotrebe i uticaja televizije, video igara i kompjutera/Interneta na zdravlje mladih, uključujući i to kako deluju na psihološko i fizičko zdravlje.

Sa stanovišta javnog zdravlja, urađen je sistematski pregled literature kao i analiza velikog broja medija koje koriste deca i adolescenti. Pregled literature je obavljen u periodu između maja i jula 2014. godine.

Deca i adolescenti provode puno vremena uz elektronske medije. Ovako značajno korišćenje medija dovodi se u vezu sa lošijim zdravstvenim statusom. Društveni i emocionalni razvoj mlađe populacije odvija se uz korišćenje Interneta i mobilnih telefona. Korišćenje elektronskih medija je uzajamno povezano, a upotreba većeg broja medija utiče na vođenje nezdravog načina života i pojavu subjektivnih zdravstvenih tegoba. Utvrđeno je da je značajan veliki broj fizičkih tegoba poput gojaznosti, glavobolje, bola u leđima, bolova u vratu i ramenima, poremećaj sna. Deca i adolescenti su konzumenti, ali i stvaraoci društvenih medija.

Trebalo bi da zdravstveni radnici i društvo u celini rade na zdravstvenoj edukaciji u smislu korišćenja elektronskih medija podsticanjem njihove razumne i kritičke upotrebe. Roditelji bi mogli da budu od pomoći ukoliko razumeju srž problema i da učestvuju u njihovom rešavanju. *Acta Medica Medianae 2015; 54(3):64-73.*

Ključne reči: *zdravstveni status, način života, Internet*