Original Research

High-risk internet behaviors and psychosocial well-being among Greek preadolescents

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ABSTRACT

INTRODUCTION: Nowadays the Internet has become an integral part of adolescents' lives. The purpose of this study is to investigate the relationship between compulsive Internet use of pre-adolescents in Greece and their psychosocial well-being.

MATERIALS - METHODS: A cross-sectional study design was applied. The study population (N=655) consisted of a random sample of adolescents attending Years 5 and 6 in primary schools located in Athens, Greece. Self-completed questionnaires were distributed, pertaining to internet access characteristics based on the Compulsive Internet Use Scale (CIUS) Also, socio-demographic variables were applied. Furthermore, teachers completed the Strengths and Difficulties Questionnaire (SDQ) related to their students' psychosocial well-being.

RESULTS: The results presented that 6th graders, boys and adolescents, who were not born in Greece, had significantly higher CIUS scores. On the other hand, greater CIUS scores were observed in students who had started using the Internet in a younger age, were members of SNS and played games online. Overall, compulsive Internet Use was positively correlated with emotional and conduct problems of preadolescences along with hyperactivity scores on the SDQ.

DISCUSSION: The results have implications about an association between Compulsive Internet Use of preadolescences in Greece and psychosocial difficulties. The results appear to suggest the importance of formulating early preventive public health policies that concentrate on enhancing students' communication skills, self-regulation and healthy life habits.

Key words: *Compulsive Internet Use Scale – CIUS; Strengths and Difficulties Questionnaire – SDQ; preadolescents; psychosocial difficulties; Digital skills education.*

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Introduction

The prevalence of Internet use in young children and adolescents has increased vastly in the last decade [1-5] due to the expansion of Internet connectivity, online gaming and use of related applications through all kind of mobile devices. Many researchers have investigated students' addictive behavior, which can affect their emotional development and relationships with their family and peers. Such behaviors have a negative impact on their academic performance, too [1,6-11]. Although research on Internet addictive use started almost two decades ago, Young (1998)[12] was one of the first to focus primarily on Internet addictive behavior and examine the extent of problems. He developed the Internet Addiction Test (IAT) by modifying the DSM-IV criteria of Pathological Gambling, in order to produce a screening instrument for addictive Internet behavior. Since then, different sets of criteria have been used and Internet Gaming Disorder has been included in the DSM-5, not as an "official" disorder, but as a "Condition for Further Study" [13].

Taking into account the internationally increasing rates of Internet addiction at an early stage of adolescence and our observation data through clinical practice within the Adolescent Health Unit of the University Pediatric Hospital, it was considered useful to examine this issue in younger children who are on the threshold of getting into adolescence. Relevant studies in Greece are few and far between as far as preadolescence children are concerned.

Compulsive Internet Use

Apart from the term "Internet Addiction Disorder", other terms, such as "Pathological Internet Use", "Problematic Internet Use", "Excessive Internet Use" and "Compulsive Internet Use" have been introduced, revealing the researchers' difficulty to agree on a definition of the phenomenon since there are basic conceptual distinctions [14]. Compulsive Internet use includes excessive loss of control, preoccupation that makes the person neglect other important aspects of life and addictive behavior, such as coping/mood modification, withdrawal symptoms and conflict [15].

The prevalence rate of CIU among adolescents ranges vastly, depending on the definition and the measures used. It varies from 1% to 3.9% in European countries [9,16-20] and from 1.6% to 20.8% in Asian countries [1,3,4,6,10,11,21-24]. Greece has shown similar prevalence rates, ranging from 1% [25] to 8.2% [26]. In addition, males seem to have higher rates of CIU compared to their female peers[2-9,11,17,18,21,24,26].

The Compulsive Internet Scale based on DSM criteria for substance abuse, pathological gambling and behavioral addictions, and used interviews of self-declared "Internet addicts" was developed by Meerkerk, et al. (2009)[15]. Originally, it consists of 14 items and has been proved a credible measurement for adolescents [2,18,21,27]. Its psychometric properties have been established in numerous countries, such as Germany [20,28-30], France [5], the Netherlands [15,18], Australia [27], India [21], Turkey [31] and Taiwan [2].

Compulsive Internet Use and psychosocial difficulties

Internet addiction can lead to many psychosocial and mental difficulties affecting all levels of human activity that is personal, family and even academic or occupational when it concerns adults. Students suffer severely on the academic level, since they may lose track of time and surf web sites aimlessly, chat with friends online or engage in interactive games, at the cost of productive study [11,12]. A considerable proportion of adolescents with CIU have unauthorized school absences, frequently skip important school or social activities, may cease attending school altogether, show poor academic performance and engage less in extracurricular activities, compared to their non- peers [2,8,21,23].

Relationships are also affected by CIU, since compulsive users gradually isolate themselves and spend less time with people in the real world. Adolescents with CIU may neglect other hobbies and social contacts, which further impair their communication skills [9]. They may ignore daily obligations and household chores, argue with their parents about the hours they spend online, become even physically aggressive when their parents try to take away their Smartphone or Internet privileges [6], thus disrupting the family interactions [20]. Low emotional stability and low agreeableness, which may correspond to aggression, have been found to increase the risk of CIU among adolescents [18-32].

Moreover, comorbid psychiatric problems, such as depression and suicide ideation [3,4,8,12,22-24,33-35], social anxiety [24,35], obsessive/compulsive symptoms [4,33], hostility or conduct problems [1,7,23,24,34,35], high-risk behaviors [8,23,34] and ADHD [1,7,24,35] are often detected, with depression being the most significant discriminating variable between adolescents with Internet addiction and those without.

The aim of the present study was to increase awareness and knowledge of the growing problem of Internet addiction in Greece. Previous research [7,8,25,26] has focused on Internet addiction among adolescent students. Therefore, our main purpose was to examine the prevalence of CIU in younger students, specifically preadolescents attending Years 5 and 6 in primary school, and identify possible associations with psychosocial difficulties.

MATERIALS AND METHODS

Participants

The sample for the present study consisted of 645 students randomly selected from 10 schools of Primary Education located in the Northern departments of the capital. There were children of preadolescent age, attending Years 5 and 6 in Greek state comprehensive schools in the year 2015-16. Schools were chosen by simple random sampling. All students were invited to participate in the study (N = 645 including 350 boys and 295 girls). No exclusion criteria for participation were applied with respect to ethnicity or socioeconomic status of participants. All socioeconomic levels were represented in the study sample.

The sample characteristics are presented in Table 1. More than half of the participants (55.7%) were 6th graders Also, 54.3% of the students were boys, 95.3% were born in Greece and 97.7% were living with both parents. Father's mean age was 47.6 years (SD = 5.0 years) whereas mother's mean age was 43.2 years (SD = 4.2 years). Additionally, 85.2% of the students had a parent who had obtained a university degree.

Instruments

Internet and social networking site use: Questions derived from the questionnaires of the European Network for Adolescent Addictive Behaviour (EU NET ADB) survey (www.eunetadb.eu) [9] and EUKids Online II study were selected to examine students' Internet use and relevant behavior. Information was gathered concerning students' Internet use (e.g. age at first use, SNS membership and time spent on SNS, frequency of Internet use, parental control) and students' behavior on the Internet, such as online gaming, frequency and hours spent on online gaming, having seen something that upset them or having been treated in a bad way online.

Compulsive Internet Use Scale.

In order to measure compulsive Internet use, a shortened version of the Compulsive Internet Use Scale [15] was used, after it had been translated and adapted in the Greek language. This short form consists of 10 items identifying the three core features of compulsive Internet use: (a) preoccupation or intense, unlimited desire (e.g., "How often do you look forward to your next Internet session?"), (b) loss of control (e.g., "How often do you skip sleep because of the Internet?"), and (c) continued use of the Internet despite the intention to stop (e.g., "How often have you unsuccessfully tried to spend less time on the Internet?"). The students answered on a 5-point Likert scale, ranging from 1 = never to 5 = very often, with higher scores indicating higher levels of compulsive Internet use.

Strengths and Difficulties Questionnaire

The Greek version [36] of the Strengths and Difficulties Questionnaire (SDQ)[37,38] was used in order to assess children's emotional and psychosocial characteristics. Teachers responded whether they thought that a child had a problem in the specific areas and if it caused distress and social impairment. It consists of 25 items and 5 subscales, with 5 items each: (a) Emotional Symptoms (e.g., "Many worries, often seems worried"), (b) Conduct Problems (e.g., "Often fights with other children or bullies them"), (c) Hyperactivity/Inattention (e.g., "Constantly fidgeting or squirming"), (d) Peer Relationship Problems (e.g., "Rather solitary, prefers to play alone"), and (e) Prosocial Behavior (e.g., "Considerate of other people's feelings"). It is scored on a 3-point Likert scale, ranging from 0 = Not True to 2 = Absolutely True, with higher scores on each subscale indicating greater difficulties in the specific domain. It also produces a Total Difficulties Score, by excluding the Prosocial Scale and summing the four remaining sub-scores. Teachers' answers can classify a child into three levels of behavior: normal, borderline and abnormal.

Socio-demographic variables

Participating students were asked to give personal information such as gender, school grade they were attending, place of birth and information about their parents' age and level of education. Parental education (highest qualification obtained by either parent) was used as a proxy measure of socioeconomic status (SES).

Procedure

The research took place in November 2015. The parents or legal guardians of all participants were informed about the study objectives and were asked for their written consent prior to the initiation of the investigation. The eligible participants were administered in groups in the classroom after they were informed about the purpose of the study and were assured about maintaining their anonymity. The study proposal was approved by the Ethics Review Board of both the P. & A. Kyriakou Children's Hospital in Athens, Greece, and the Hellenic Ministry of Education and Religious Affairs. Response rate measured approximately 89%.

Data analysis

Normal distributed variables are expressed as mean (standard deviation), while variables with skewed distribution are expressed as median (interquantile range). Qualitative variables were expressed as absolute and relative frequencies. Student's t-tests and analysis of variance (ANOVA) were computed for the comparison of mean values. Bonferroni correction was used in order to control for type I error. Pearson or Spearman correlations coefficients were used to explore the association of two continuous variables. Correlation coefficient between 0.1 and 0.3 were considered low, between 0.31 and 0.5 moderate and those over 0.5 were considered high. All reported p values are two-tailed. Statistical significance was set at $p<0.05$ and analyses were conducted using SPSS statistical software (version 19.0).

Table 1 Sample characteristics

	N (%)
Grade	
5th	290 (44.3)
6th	365 (55.7)
Gender	
Males	350 (54.3)
Females	295 (45.7)
Born in Greece	
Yes	615 (95.3)
No	30 (4.7)
Living with	
Both parents	630 (97.7)
Mother	10 (1.6)
Father	5 (0.8)
Father's age, mean (SD)	47.6 (5.0)
Mother's age, mean (SD)	43.2 (4.2)
Parental educational level	
High school	10 (1.6)
After high school	25 (3.9)
Technical school	60 (9.4)
University	545 (85.2)

Table 2 Characteristics regarding students' Internet use

	N (%)
Age at first use of the Internet, mean (SD)	6.2 (1.3)
Member of SNS	
Yes	330 (51.2)
No	315 (48.8)
Daily use of SNS on a school day	
None	55 (16.9)
Less than 1 hour	115 (35.4)
1-2 hours	95 (29.2)
More than 2 hours	60 (18.5)
Daily use of SNS on the weekend	
None	25 (7.8)
Less than 1 hour	85 (26.6)
1-2 hours	95 (29.7)
More than 2 hours	115 (35.9)
My parents allow me to visit every site I want	
Never	285 (44.5)
Rarely	85 (13.3)
Sometimes	130 (20.3)
Often	70 (10.9)
Very often	70 (10.9)
During the last month, how many days did you use the Internet?	
1 day/week	30 (4.7)
2 days/week	75 (11.7)
3 days/week	90 (14.1)
4 days/week	80 (12.5)
5 days/week	80 (12.5)
6 days/week	45 (7.0)
7 days/week	100 (15.6)
I use it but not every week	140 (21.9)

RESULTS

Mean age at first Internet use was 6.2 years (SD = 1.3 years) (Table 2). Almost half of the participants (51.2%) were members of SNS. During a school day, 35.4% of the students used SNS for less than an hour while on weekends the majority (35.9%) used SNS for more than 2 hours. Additionally, 44.5% of the students were not always allowed to visit every site they wanted. At the same time, 21.9% of the students used the Internet in the last month but not on a weekly basis. Most common ways of accessing the Internet was through a portable handset (iPad or similar device), a mobile phone or a PC shared with other family members (65.9%, 36.5% and 34.9%, respectively).

Regarding to students' behavior on the Internet is presented in Table 3. Median number of hours playing games on the computer was 1.0 (0.0 - 2.0) for a school day and 1.5 (0.5 - 3.0) for the weekend. Also, 86.8% of the participants had played games on the Internet and 26.2% were playing 3-4 times per week. Furthermore, 28.7% of the participants had seen something on the Internet that upset them and 10.9% had been treated in a bad way while they were on line.

Furthermore, students' attitudes regarding their misuse of the Internet are presented in Table 4. Firstly, 19.5% of students believe often / very often that they should be using the Internet less. Also, 15.7% of the participants were often / very often told by others that they should be using the Internet less. Finally, 12.5% of the students catch themselves often / very often feeling anxious to get back on line.

Also, the CIUS scores associated with student's characteristics are presented in Table 5. Mean of the CIUS score was 1.84 (SD = 0.70). The 6th graders had significantly greater CIUS score than the 5th graders. Also, boys and students who were not born in Greece had significantly greater CIUS score. After Bonferroni correction, it was found that students, whose parents had a middle education level background (high school / after high school graduates), had significantly greater CIUS score compared to those whose parents were university alumni (p = 0.001). Students who started using the Internet in a younger age had significantly greater CIUS score. Moreover, significantly greater CIUS score was found in those who were members of SNS and those who played games on the Internet. Greater daily use of SNS (on a school day or on the weekend) was positively associated with the CIUS score. Additionally, another considerable finding was that 7% of the respondents had answered very often in> 5 questions in the Compulsive Internet Use Scale (CIUS).

Finally, greater emotional and conduct problems seemed to be associated with a greater CIUS score (Table 6). Also, greater hyperactivity seemed to be associated with greater CIUS score.

Table 3 Information regarding students' behavior on the Internet

	N (%)
Hours of playing games on the computer on a school day, median (IQR)	1.0 (0.0 -2.0)
Hours of playing games on the computer on the weekend, median (IQR)	1.5 (0.5 - 3.0)
Ever played games on the Internet	
Yes	560 (86.8)
No	85 (13.2)
If yes, how often	
Every day or almost every day	40 (7.5)
3-4 times/week	140 (26.2)
1-2 times/week	135 (25.2)
Fewtimes/ month	95 (17.8)
Lessoften	125 (23.4)
In the last month, have you seen anything on the Internet that upset you?	
Yes	185 (28.7)
No	460 (71.3)
If yes, how often	
Every day or almost every day	5 (2.6)
3-4 times/week	35 (17.9)
1-2 times/week	10 (5.1)
Fewtimes/ month	35 (17.9)
Lessoften	110 (56.4)
In the last month, have you been treated in a bad way while you were online?	
Yes	70 (10.9)
No	575 (89.1)
If yes, how often	
Every day or almost every day	5 (7.1)
3-4 times/week	5 (7.1)
1-2 times/week	15 (21.4)
Fewtimes/ month	15 (21.4)
Lessoften	30 (42.9)

Table 4 CIUS items

	Never	Rarely	Sometimes	Often	Very often	Often/ Very often
	N (%)	N (%)	N (%)	N (%)	N (%)	(%)
How often do you continue to use the Internet, despite your intention to stop?	320 (50.0)	155 (24.2)	95 (14.8)	45 (7.0)	25 (3.9)	10.9
How often do you find it difficult to stop using the Internet, when you are online?	395 (61.7)	145 (22.7)	35 (5.5)	50 (7.8)	15 (2.3)	10.1
How often are you short of sleep because of the Internet?	465 (72.7)	85 (13.3)	45 (7.0)	20 (3.1)	25 (3.9)	7.0
How often do you think you should use the Internet less often?	200 (31.3)	200 (31.3)	115 (18.0)	55 (8.6)	70 (10.9)	19.5
How often do others say you should use the Internet less?	250 (39.1)	150 (23.4)	140 (21.9)	60 (9.4)	40 (6.3)	15.7
How often do you prefer to use the Internet instead of spending time with others?	445 (69.5)	140 (21.9)	25 (3.9)	20 (3.1)	10 (1.6)	4.7
How often have you unsuccessfully tried to spend less time on the Internet?	415 (64.8)	120 (18.8)	55 (8.6)	20 (3.1)	30 (4.7)	7.8
How often do you look forward to your next Internet session?	265 (41.4)	190 (29.7)	105 (16.4)	55 (8.6)	25 (3.9)	12.5
How often do you think about the Internet, even when not online?	310 (48.4)	210 (32.8)	60 (9.4)	50 (7.8)	10 (1.6)	9.4
How often do you feel restless, frustrated or irritated when you cannot use the Internet?	335 (52.3)	185 (28.9)	65 (10.2)	25 (3.9)	30 (4.7)	8.6

DISCUSSION

The main purpose of the present study was to examine Compulsive Internet Use in a sample of pre-adolescents and its possible connection to psychosocial problems. Students in our research reported that they first used the Internet when they were approximately 6 years old. One-fifth of them used the Internet in the last month, but not every week, while a large percent (44.5%) said they were not allowed by their parents to visit every site they wanted. The latter could be attributed to the younger age of our sample; therefore, parents are still able to monitor their children's Internet use and set boundaries. Half of the participating students were members of SNS, with the majority of them using such sites less than one hour on weekdays, but more than two hours on the weekends. Students mainly used mobile devices to access the Internet, such as tablets and mobile phones, or a PC shared with other family members. For the pre-adolescents of our sample, the use of a shared PC may explain why they reported being restricted by their parents in the sites they wanted to visit.

Moreover, 86.8% of our sample stated that they had played games online, half of them between one to four times per week. During school days they spent 1 hour playing games on the PC, which was increased to 1.5 hours during the weekend, according to their own reports. Examining the data, it is important to keep in mind the potential reporting or recall bias of young adolescents. Nearly one-third of the students said that they had seen something on the Internet that had upset them, while almost 11% declared that they had been mistreated while they were online.

The mean CIUS score was 1.84 (the scale ranges from 1 to 5). Higher CIUS scores were associated to the 6th graders, to boys and to students who were born in countries other than Greece. It has been proven in other studies that male students have higher rates of CIU compared to female students [2-4,6-9,17,19,21,34], perhaps due to the differential frequency of Internet utilization: adolescent boys tend to use the Internet more frequently and excessively.

Students whose parents had a middle education level background had significantly greater CIUS scores compared to those whose parents had a university degree. Although in a recent study [9] parents' lower educational level contributed to the dysfunctional Internet behavior of their children, it remains a subject for further investigation.

Table 5 CIUS scores associated with student's characteristics

	CIUS		
	Mean	SD	P
Total sample	1.84	0.70	-
Grade			
5th	1.76	0.77	0.009¯
6th	1.90	0.63	
Gender			
Males	2.01	0.69	<0.001¯
Females	1.65	0.66	
Born in Greece			
Yes	1.82	0.69	<0.001¯
No	2.28	0.61	
Parental highest educational level			
High school/ After high school	2.26	0.77	<0.001¯¯
Technical school	1.97	0.51	
University	1.80	0.70	
Age at first use of the Internet, r*	-0.33		<0.001
Member of SNS			
Yes	1.99	0.66	<0.001¯
No	1.69	0.70	
Daily use of SNS on a school day, r**	0.46		<0.001
Daily use of SNS in the weekend, r**	0.36		<0.001
Ever played games on the Internet			
Yes	1.88	0.71	<0.001¯
No	1.55	0.52	

*¯Student's t-test; ¯¯ANOVA; *Pearson's correlation coefficient; **Spearman's correlation coefficient*

Table 6 Pearson's correlation coefficients between CIUS scores and SDQ subscales

		CIUS
Emotional Symptoms	r	0.22
	P	0.001
Conduct Problems	r	0.16
	P	0.015
Hyperactivity/Inattention	r	0.14
	P	0.045
Peer Relationship Problems	r	0.05
	P	0.466
Prosocial Behavior	r	-0.11
	P	0.119
Total Difficulties Score	r	0.06
	P	0.380

Furthermore, significantly higher CIUS scores were found in preadolescents who started using the Internet in a younger age and played games online. Playing games on the Internet has emerged as a significant predictor of problematic Internet use in Greece [7,26] and in other European countries [9,39]. Membership of SNS and greater daily use of such sites (on a school day or on the weekend) were positively associated with high CIUS scores, replicating similar findings that socializing activities, such as chatting or email, and longer Internet use per day are significantly linked to Internet addiction [4,6,9,39].

The results also indicated that emotional symptoms and conduct problems correlated positively, although at low levels, with higher CIUS scores. This is consistent with previous research suggesting that adolescents with CIU display low emotional stability and agreeableness [18,32] and may suffer from loneliness, emotional and social adaptation problems [6], even depression and social phobia [3,8,12,22,23,35,24]. Consequently, they may become argumentative and disruptive and exhibit conduct problems [1,7,23,24,34,35]. Lastly, hyperactivity was associated with greater CIUS scores, which has also been found in another sample of Greek adolescents and in Asian countries [1,7,24,35]. Although the present study did not distinguish cause and effect, there is strong evidence that CIU and psychosocial difficulties are interconnected, whether CIU adds a deteriorating effect on preexisting maladjustment or it precedes the appearance of such problems.

Limitations

The design of the study was cross-sectional and the direction of the relationship between CIU and psychosocial difficulties cannot be defined. Other important aspects, such as parental forms of upbringing, the establishment of internet use limits in the family or peer relationships and status, were not examined due to the limitation of the questionnaires. Finally, with the exception of the SDQ, all the other measures relied on self-report data, thus preventing the accurate assessment of CIU.

Conclusion

The aim of this research is to be added to the rest of the recent Greek studies on the matter of Internet addiction, enriching the existing sample of student(pre-adolescent) population, as it focused on younger ages. The results reveal that constant and problematic Internet use can occur even in pre-adolescents and should not be overlooked. Future research should examine students at even younger ages, since nowadays more younger ages tend to use constantly the Internet through laptops and mobile devices at growing rates. Also longitudinal research could be used to explore causal relationships between CIU and emotional and behavioral problems.

On the other hand, state policies should focus, firstly, on the awareness and training of educators, so that they will be able to identify and refer concerning cases to the relevant health services. Secondly, prevention and early intervention programs should be established nationwide, concentrating on enhancing students' communication skills, self-regulation and healthy life habits. New technologies, with the appropriate mediation of the teacher, are a tool for students to learn, resolve problems and develop critical thinking and creativity. The lack of full-scale digital education accentuates a variety of high-risk online behaviors (for example, abuse, addiction, and cyber bullying).

Overall, education is necessary to prepare students early and on a permanent basis so that they can actively contribute to shaping a growing and evolving digital world. It is important students to learn to use the means for their own education and information. Digital literacy means much more than simple learning how to use the new technology. It requires a creative media interaction. Nevertheless, in order to protect the adolescents from the network danger, technical solutions are not enough. Training and practicing skills, through the proper use of the media is the best way to guarantee the safe use of the Internet and thus the protection of children and young people. In modern information-knowledge age, the ability to use media, digital literacy, is the new key-skill to completely educate young people and to their successful beginning of the adult life. Particularly young children need help and support in order to be able to co-operate on their own responsibility with the multiple aspects of the media.

An integrated digital education should also extend to the protection and promotion of digital rights and psychosocial health and adaptability at the level of people-users, thus the resilience at society level, which includes the development of social communication skills diffused in all areas of everyday life, as well as the

the increase of innovation both in productivity and participation in all social structures.

It is vital to consider that the current global state of the COVID-19 pandemic makes the subject of our research even more relevant, as students around the world, from pre-school age have been forced to spend many hours in front of computers connected to the internet. Unfortunately, distance learning was the only way to get educated during lockdown periods. This was necessary in order to limit the rapid transmission of the virus to the society as a whole [30,40]. This condition employs educators, psychologists and pediatricians, enriching the scientific dialogue with new data, assessments and reflections, on the consequences that the long-term use of the internet may have on the psychosomatic and social development of school-age children.

During the stressful period of lockdown, many children might feel anxious or isolated. Thus, parents all over the world rely on digital solutions, so that their children have the chance to get educated, be entertained even socialize from a safer environment that is provided form home. More and more institutions, governments and international companies launch and share useful advice on how to protect young people from the high-risk internet use, such as cyber bulling effects, hate speech or addiction caused from unlimited online activities [30,40].

IMPLICATIONS FOR SCHOOL HEALTH

The use of the internet is a necessity for the modern society. In fact, in the context of the special conditions of today's global pandemic, through which a large volume of social, economic and educational functions is carried out, that use is not only a necessity, but also an obligation. In Greek educational system the Information and Communication Technologies (ICT) course has been introduced in the Curriculum of the primary school in all grades for 1 hour per week. Given the current educational needs, the teaching time should be increased and the contents of the course should be modified.

Our proposal, therefore, is to introduce the use of the New Technologies (N.T.) as a cognitive tool in every subject of the primary school, in parallel with the use and utilization of traditional educational tools and materials, in order to increase the familiarity of students with their use in different functions (educational software, internet, etc.). This "1 hour per week" that specializes in the teaching of the course of Informatics should be dedicated to preventive practices of good use of the N.T. and especially the internet. Particularly:

•*Given the fact that the students in our research reported that they first used the Internet when they were about 6 years old, it is important from the first grades of basic education (1st -2nd) to support students in getting acquainted with safe surfing practices, such as not to open ads, to create a secure username and password and of course, to learn which personal information can be safely shared on the internet.*

•*According to the review of the international literature, the cyberbullying usually starts at the age of 8 and in some cases it increases, taking uncontrollable aspects, it is crucial in the next grades (3rd -4th) that the students are guided correctly, first of all not to intimidate their peers and then how to deal with such risks.*

•*Finally, given that the vast majority (86.8%) of our sample (preadolescents) stated that they were playing online games, half of which range from one to four times a week, as well as the fact that online games are highly correlated with the Compulsive Internet Use, it is essential during the last grades of primary school (5th-6th) students to be trained in life skills, with emphasis on the prevention of high-risk behaviors, with specialized educational materials.*

All of the above proposals do not require any financial cost and are mainly an issue of educational policy decisions. The only expense that would be necessary for the option of reviewing the curricula of the primary school concerns the training of teachers and the production of appropriate educational materials. This budget can be adapted to the financial data of each school unit, since a large part of both training and educational materials is done at a low cost, utilizing the internet itself.

Abbreviations

CIUS (Compulsive Internet Use Scale)

CIU (Compulsive Internet Use)

SDQ (Strengths and Difficulties Questionnaire

SNS (Social Network Sites)

SES (Socioeconomic Status)

Human Subjects Approval was granted by the Ethical committee of the Second Dept. of Pediatrics of the P. & A. Kyriakou Children's Hospital of the National and Kapodistrian University of Athens and the Hellenic Ministry of Education and Religious Affairs.. The parents or legal guardians of all participants were informed about the study objectives and were asked for their written consent

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