

Prevalence and Consequences of Internet Addiction in a Cohort of Tunisian Adolescents: A Pilot Study

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Abstract

Introduction: There are few studies interested in internet addiction in Tunisia, despite the worldwide concern with this problem. The aim of the study is to measure the prevalence of internet addiction among secondary school students in the city of Monastir, Tunisia, and to portray its impact.

Methodology: It is a transversal epidemiological study carried on a sample of students attending secondary school in the city of Monastir, Tunisia. It was conducted in the course of the 2010/2011 school year. The participants had filled the Internet Addiction Test of Young and a data file regarding the socio-demographic information, physical and psychological history and information about the internet access and use. The Internet Addiction Test consists of 20 items, rated according to Likert scale. The total score ranges from 20 to 100. It is considered as internet addicts those whose the scores are equal and higher than 70.

Results: The sample consisted of 415 males (M) and 567 females (F) with a mean age of 17.10 ± 0.92 years. The prevalence of internet addiction was 11.6% (IC 95%: [9.60-13.61]); M: 12.8% (IC 95%: [9.55-15.99]), F: 10.8% (IC 95%: [8.20-13.31]). The consequences of cyberaddiction reported by this study were: sleep disorders, neglecting household chores, academic difficulties, social isolation and mood and behavior disturbances (violence, irritability).

Conclusion: The prevalence of internet addiction is elevated in Tunisia. Many negative consequences are identified. Urgent measures should be taken to counter the problem.

Keywords: Internet; Addiction; Adolescent; Prevalence; Internet addiction TEST; Epidemiology; Tunisia

Introduction

In few decades, internet has invaded people's lives to become indispensable [1,2]. The use of Internet is continually expanding. In 2014, the internet access rate has reached 40% worldwide, with rates exceeding 80% in several countries including USA, Germany and Japan [3]. It is a fact that the use of internet has many positive effects [4], but with the increase in this use, some researchers start to point the side effects of this phenomenon [5-7]. The first studies conducted in this field were in the 90's, with the emergence of a new concept which is "internet addiction" or "cyberaddiction" [8-10]. It is defined as the difficulty controlling ones impulses and the inability to disconnect from internet [8]. From the start, this concept was far from getting the unanimity. Despite this controversy, it's still a fact that internet addiction is a problem that exists all around the world [11-12]. It seems that adolescents are at a higher risk to develop internet addiction than other age range [13-24]. This vulnerability may be due to the relative cognitive immaturity and the physiological and psychological changes [25,26]. It has also been reported, by many researchers, that the excessive use of internet was associated with many social and psychological disorders, from academic problems to mood and behavior disorder, especially among youngsters [22,27-29].

In Tunisia, internet access is increasing especially in the last four years [1] but there is no study exploring internet addiction except for one study that was conducted on a very small sample and with many methodological bias [30]. So this work had emerged from our concern and also a general concern in the society and government since the Revolution, to improve the well-being and the mental health of the youth in Tunisia. It is in collaboration between the Child and Adolescent Psychiatry Unit in the University Hospital of Monastir, Tunisia and the Medical School Services of the Public Health Ministry. Our aim in this study was to measure the prevalence of internet addiction in secondary school students in the city of Monastir, Tunisia and to portray its impact as a first step for public and government awareness of the problem.

Methodology

It is a transversal epidemiological study. The participants were students attending secondary school in the city of Monastir, Tunisia. This study was conducted in the course of the 2010/2011 school year, from January 16 to February 20. A convenience sample including all the 1,330 students in the second and third grades of two secondary schools in the city of Monastir. The city had a third secondary school; it is a pioneering high school. This one was eliminated due to the excessive heavy schedule of the students. The secondary school in Tunisia is achieved within 4 years. The students attending the first grade and terminal grade were excluded from the study to avoid the two delicate periods in high school. We had obtained the ethical

approval of the Minister of Education, and the authorization of the Principal of each school and the class head teacher. We had explained to the participants the aim of the study. The participation was voluntary, anonymous and after clear consent. The students filled the questionnaire in a self-reporting format. Every student was given 20 min to complete it. This questionnaire contained. The Internet Addiction Test as well as additional questions regarding the socio-demographic information (age, gender, level of studies and the familial status), psychological and physical condition information (history, behavior disorder such as robbery, violence, alcohol and substance use, stress) and access and use of computer and Internet. The Internet Addiction Test was used to determine internet addiction. It was a modified version of that developed by Young [31], to adjust to Tunisian culture. The test was translated to Arabic for the purpose of the study. We had proceeded to a first translation to Arabic and a retranslation to English. After comparison of the two versions, we opted for a final version. It consists of 20 items, scored according to Likert scale ranging from 1 to 5. The total score ranges from 20 to 100. Three groups of

Internet users are defined according to Youngsters: Internet Addicts with score higher than 70, possible Internet Addicts when the score is between 40 and 69 and normal internet users when the score is under 39. In this study we have defined two groups: Internet Addicts when the score is higher than 70 and non-Internet Addicts when the score is below 69. The consequences of Internet Addiction were studied by processing results from IAT items number 2, 6, 13, 14, 19 and 20. All the data was analyzed using SPSS-PC (version 19 for Windows; SPSS, Chicago, IL). Descriptive analysis was performed on all variables. The Analysis was performed in the department of information system.

Results

The number of participants was 982 with a response rate of 74%. The background of our sample is depicted in Table 1. The sex ratio was 1.3 with female predominance (female: 57.7%, male: 42.3%). The mean age was 17.06+/- 0.91 year.

	Characteristics	Male: n=415; (%)	Female: n=567; (%)	Total: n=982; (%)
School year				
	Second year	208 (50.1)	247 (43.6)	455 (46.3)
	Third year	200 (48.2)	318 (56.1)	518 (52.7)
	Unspecified	7 (01.7)	2 (00.3)	9 (01.0)
Family situation				
	Living with parents and siblings	388 (93.5)	506 (89.3)	894 (91.1)
	Living with parents only	3 (00.7)	15 (02.6)	18 (01.8)
	Living with one parent	18 (04.3)	41 (07.3)	59 (06.0)
	Other situation	6 (01.5)	5 (00.8)	11 (01.1)
Health problem				
	Physical	12 (02.9)	25 (04.4)	37 (03.8)
	Psychological	5 (01.2)	7 (01.2)	12 (01.2)
	None	398 (95.9)	535 (94.4)	933 (95.0)
Behavior disorders				
	Present	109 (26.2)	64 (11.2)	173 (18.1)
	Absent	306 (73.8)	503 (88.8)	809 (81.9)

Table 1: Summary table of the characteristics of the study population (n= 982).

Characteristics	Male (n=415) (%)	Female (n=567) (%)	Total (n=982) (%)
Using Computer at home	383 (92.2)	515 (90.8)	898 (91.4)
Internet access At home	329 (79.2)	440 (77.6)	769 (78.3)
At public centers	148 (35.6)	147 (25.9)	295 (30.0)

Table 2: characteristics of internet use among high school students (n=982).

Table 2 depict characteristic of internet use among our population. The male students used Internet more frequently than the female students with respectively 29.6 ± 25.7 and 21.5 ± 19.09 hours per week. The IAT scores were between 20 and 96 with a mean score of 48.6 ± 16.47 . The male students had a higher score (50.3 ± 16.33) than females (46.8 ± 16.66). The prevalence of Internet Addiction in our sample was 11.6% (IC 95%: [9.60-13.61]). The prevalence of internet addiction was higher among boys than girls (12.8% (IC 95%: [9.55-15.99]), and 10.7% (IC 95%/[8.20-13.31]) respectively).

Regarding the consequences of Internet Addiction, We found a significant correlation between internet addiction and neglecting house chores (ORb=10.1), sleep disorder (ORb=14.5), academic difficulties (ORb=8.5), mood (ORb=22.3) and behaviors disorder (ORb=8.9) and social isolation (ORb=14.5). The results are detailed in Table 3.

Consequences	Cyber addict, n=114 (%)	Not cyber addict, n=868 (%)	ORb	P
Sleep disorders	93 (81.6)	203 (23.4)	14.5 [8.809-23.893]	<10 ³
Academic difficulties	75 (65.8)	159 (18.3)	8.5 [5.615-13.096]	<10 ³
neglecting family's cores	91 (79.8)	243 (28.0)	10.1 [6.292-16.459]	<10 ³
Mood disturbances	102 (89.5)	238 (27.5)	22.3 [12.089-41.481]	<10 ³
Behavior disturbances	94 (82.5)	298 (34.4)	8.9 [5.429-14.834]	<10 ³
Social isolation	93 (81.6)	203 (23.4)	10.9 [6.780-17.765]	<10 ³

Table 3: Consequences of internet addiction in high students, n=982.

Discussion

Internet Addiction has become a major problem in the world [32], especially among adolescents [33,34]. Beard and Wolf defined IA as "an excessive internet use causing psychological, physical and personal issues" [35]. Many countries have started preventive strategies to face this emerging problem. Although this study is the first one conducted in a large cohort in Tunisia, we are aware of its limitations. First, the use of a convenience sample is a risk of possible sampling bias, but we have included in this sampling the largest high schools from the point-of -views of number of students in the city of Monastir. And we had opted for including in our sample only the student of the second and the third year to limit the two critical years in secondary school in Tunisia which are the first and the terminal one. Second, the internet addiction questionnaire used is not validated in Arabic. The use of the translation and retranslation process aims to minimize the risk of biases. Third, we used the items of the IAT to determine the consequences of cyberaddiction and not specific questionnaires. We had opted for this method to limit the number of questions and the duration of the completion of the questionnaire. By doing this, we had obtained more cooperation from the students and the teachers and less interference with their schedule.

We estimate that this study, despite its limitations, is a good start to reveal an under-estimated major health problem, to awake the awareness of both the healthcare workers and the general public about it and to start preventive measures.

The prevalence of internet addiction found in this study (11.6%) is among the highest in the world. A Meta-Analysis of 31 Nations across Seven World Regions found a global prevalence of Internet Addiction of 6% [36]. It is extremely difficult to compare our results with the international literature, due to the extreme variability in rates depending in country, cultural background and methodology used in each research [37]. Concerning the latter, there are more than 21 tools

used in researches on internet addiction and it is due to the lack of a clear definition and consensus about it [38,39]. In the Arab-Muslim world there are few studies interested in Internet Addiction. The prevalence changes a lot with every study (from 3% [19,20] to 54% [21]). In the most recent published studies, the prevalence of Internet Addiction ranges from 1.8% in an Iranian study to 15.8% in a Taiwanese one [40-46]. The prevalence of Internet Addiction in adolescents, in Europe, is variable from less than 1% [13] to 36.7% [14] depending on the study. In North America, the prevalence varies from 0% [12] to 8.1% [11] in 2004. In Asia, where the Internet Addiction in adolescents is considered a major health problem in countries like China and South Korea [15,16], the prevalence of Internet Addiction is wildly documented and it goes from 0.6% [17] to 37.9% [18] between 2003 and 2007.

Many studies had pointed the negatives consequences of excessive internet use [22,27]. In this study, 79.8% of adolescents with Internet Addiction were neglecting their household chores to have more time on line, compared to only 28% among adolescents without internet addiction. It is one of the highest rates in the world. Kwiatkowska et al. [47] had reported a rate of 42.6% of chore neglect and Ko et al. [48] had reported a rate less than 2%. There was, also, a significant relation between Internet addiction and having academic problems, in this study. The rate was 65.8% of adolescents with Internet Addiction, which is close to that of 50% noted in the study of Young [8] in 1998. Such results were also found in many recent studies [2,49,50]. The academic impact of excessive internet use can be a consequence of the perturbation of the whole life-style and absenteeism [51-54]. It may also be attributed to a chaotic life-style that leads to internet addiction and poor academic results [55,56]. Internet addiction can be, on the contrary, the consequence of bad school results.

Sleeplessness was also highly reported by the group of Internet Addiction in this study, the rate reached 81.6%. A very close rate (81.1%) was found by Kim et al. [57]. In fact, adolescents with cyberaddiction report that they prefer to stay until late at night on line than sleep [2,58].

Unlike the evident relation between sleep disorders and IA, the relation between internet use and social life is more controversial [59]. In this study, social isolation was reported as a consequence of Internet Addiction by 81.6% of internet addict adolescents. Some researchers had shown the same results. In these studies, excessive usage of internet was related to isolation [60], social withdrawal [61,62] and deterioration of family interaction [60]. Adolescents with excessive use of internet had a worsening relation with family and friends [63]. Some authors had underlined the fact that, even if Internet is a way to easily create more relationships than in the real world, these relationships are lacking in "quality". They qualified them by "weak ties", on the contrary of "strong ties" developed in the real world [64].

Another consequence of internet addiction reported in this study was the mood and behavior perturbation. The majority of the adolescent internet addicts of our sample become more violent and irritable every time that they were disconnected from Internet. These symptoms disappear when they are connected to internet. It's a fact reported in many studies [51,65,66]. Many authors had reported that excessive internet use increases assaultive behavior [51,65,66]. Staying without internet access for some days causes irritability and gloomy temper among adolescents with Internet Addiction [65].

The prevalence of internet addiction in this study is among the highest in the world. Its consequences are frequent and have a negative

impact on the adolescent functioning. It's important to identify the risk factors of this problem to establish adequate measures. The preventive program must involve the whole population. It is important to get people aware of the existence of such disorder and its negative consequences. A program to optimize adolescents' usage of internet can be very helpful, especially as the "screening" of cyberaddiction is easy, thanks to the diagnosis tests such as IAT, used in this study. People with high risk of internet addiction should benefit from a special program that helps them minimize their internet usage, improve their free time management, bind real relationships and discover new interests. Psychological and social help should also be provided to avoid the serious consequences of internet addiction.

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