Internet addiction among academic youth in Białystok

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ABSTRACT

Objective: The objective of this study was the assessment of Internet addiction among academic youth in Białystok.

Material and methods: The study was conducted among 100 students of the Medical University of Białystok, 100 students of Białystok Univeristy, and 100 students of Białystok Technical University. The mean age of the whole sample was 21.7 ± 2.3, range 18-30 years. The following instruments were administered to the participants: the Kimberly Young test, – test of the intensity of the abstinence syndrome, and a test of "on-line" addiction.

Results: A total of 325 (92.06%) women and 27 (7.94%) men participated in the study. Most of the students had own computers and e-mail. They spend time using a computer a few hours a day, and from 11 to 21 hours per week. Students used the Internet, mostly to send e-mails, search for information needed in science and IRC. Nearly 10% of students had the Internet addiction, abstinence and "on-line" syndrome. Students living in the city showed more problems with the abuse of the Internet than students from the village.

Conclusions: In the present study, we found that about 10% of the students of the Medical University, Białystok University and Białystok Technical University had symptoms of the Internet addiction, abstinence and "on-line" syndrome.

Key words: Internet addiction, abstinence syndrome, students

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INTRODUCTION

Almost 97% of Polish preadolescents (11-14 years) and 98% of adolescents (15-17 years) use the Internet [1]. Data from Poland indicate that nearly 99.4 % of students use the Internet [2]. Adolescents and young people are often Internet addicts [3]. Young in 1996 was the first to define Internet dependence in clinical terms, adapting several criteria derived from the diagnosis of pathological gambling [4].

Since then, many scientists have actively pressed for Internet addiction disorder to be included in the formal diagnoses of the DSM-V [4,5].

At present, although the number of research studies in the field is constantly increasing, a standard definition of the problem does not exist, and we lack general agreement on the use of terminology. In the Polish scientific literature, there several terms for Internet addiction: netaholics, netaddiction, cyberaddiction, computer addiction, information addiction or syndrome of Internet addiction [6].

There is a rapid development of network construction in universities, and the number of Internet-using university students is increasing. A series of problems, including Internet addiction disorder (IAD) resulting from the misuse of the Internet accompanying excessive use of the Internet, arouse the attention of researchers around the world [7-11].

Furthermore, to our knowledge, apart from a previous report by Zboralski et al. [12], no other Internet addiction studies have been conducted on Polish medical university students. They studied the prevalence of computer and Internet addiction among 120 pupils from primary, middle and high schools.

Zboralski et al. [12] used their own questionnaire, the State-Trait Anxiety Inventory and the Psychological Inventory of Aggression Syndrome. They found that every fourth pupil was addicted to the Internet. Moreover, more frequent use of the computer and the Internet was connected with higher levels of aggression and anxiety.

The objective of this study was the assessment of Internet addiction among students of the Medical University of Białystok, Białystok Univeristy, and Białystok Technical University.

MATERIAL AND METHODS

Participants

The study was conducted among 100 students of the Medical University of Białystok, 100 students of Univeristy of Białystok, and 100 students of Białystok Technical University in Poland. The mean age of the whole sample was 21.7 years; *SD*= 2.3 years, range 18-30 years. Two hundred and twenty–six (97.4%) were female nursery students, 71 (100%) were female midwifery students, and 28 (51%) were female and 27 (49%) were male medical rescue students. The study was conducted between 2008 and 2009. There was a gender difference (chi-square test $p < 0.001$).

We also assessed some basic demographic information (gender, age, place of residence). All students were selected as respondents after obtaining verbal consent.

The study was approved by the ethics committee of the Medical University of Bialystok, Poland (R-I-002/314/2010).

Statistics were calculated using Statistica 7.1 PL. The differences between the groups were determined by the parametric t-test and nonparametric statistical test: Chi-square test where appropriate. Differences were considered statistically significant when $p < 0.05$.

RESULTS

Most students lived in the city - (74. 2%). Women were dominated in the study group (62.2%). Among students of Białystok Polytechnic University was 64% of woman and 36% of man, Medical University – 80% of woman and 20% of man, and Białystok University 69% of woman and 31% of man. A total of 325 (92.06%) women and 27 (7.94%) men participated in the study. Most of the respondents (81.7%) were aged between 21 and 30 years old. It accounted for 18.0% of respondents aged 18-20 years and 0.3% were aged 31-40.

The research was conducted in 12 fields of study, of which the largest number of students such as fields as management (17%), nursing (16.7%), physiotherapy (16.7%), economics (9.3%), electro-technics (7.3%), biology (7.7%), logistics, IT (6.7%), agriculture (6.3%), tourism (5%), forestry (0.3%), and automation (0.3%).

Students of the first year accounted for 47.6% of respondents, 14.6% the second year and the third year - 37.8%. Only three people (1%) of the study group did not have a computer.

The majority of respondents had an e-mail from quite a long time. Sixty-five respondents (21.7%) had their own e-mail box for 10 years, and 14 (4.7%) of respondents - from 11 to 16 years. Respondents most frequently (70.2%) used the Internet at home. In this regard, no differences were found either, depending on gender or place of origin, or on education.

Some students used the computer in friends (14.3%), at the library (4.8%), in relatives (5.5%), in an internet café (0.7%), and 0.9% of respondents in other places, including, for example, at work. Almost 88% of the students spent their time on the computer every day, several times a

week - 9.3%, once a week - 1.3%, several times a month - 0.7%, and only 0.3% of the respondents used the Internet once a month or less.

Nearly, 23% of respondents spent on the computer for about two hours a day, 19.9% - three hours a day, 14.9% - four hours, and 13.2% five hours.

Males spent more time than females using the Internet. Students used the Internet, mostly to send e-mails - 10.6%, to find the information - 9.4%, and IRC - 9.3%. No significant difference in website surfing between males and females was found.

The other students used the Internet to contact with the University (7.2%), to download music (7.0%), to access a bank (6.7%), to download movies (6.2%) and software (5.5%), to talk on skype (5%), to participate in discussion groups (4.1%), playing online games (4.0%), for downloading games (3.1%), browsing erotic sites (2.3%) or activate it automatically (5%).

Inability to use a computer could produce different feelings among the respondents. One of the responses indicated were agitation (7.7% of students).

In the case of the inability to use the Internet, obsessively thoughts about what is happening on the network - 12.4% of respondents felt the agitation - 7.7%, a marked reduction in the mood - 10% of respondents express concern or anxiety - 8% of students, and unconditional reflexes, such as thoughts, deliberate or involuntary movement of his fingers in a characteristic manner, the keyboard occurred in 5.4% of respondents.

An extreme manifestation of the need for contact with the network where the fantasies and dreams about the Internet, reported - 3.3% of respondents.

Some respondents (24.4%) had certain symptoms, such as a strong need, or even compulsion to use a computer.

Some students (20.2%) had benefits using the Internet, despite awareness of the harmful consequences such as physical, mental, and social.

Slightly, fewer respondents (12.7%) in the last year felt the conditions such as: the feeling of pleasure or neglect of their interests to spend time before the Internet.

Progressive neglect of alternative pleasures or interests existing in favor of the Internet, reported 12.7%. Only 3.8% of respondents said they always neglect household chores to a computer.

It can be concluded that the network "is not consumed in its entirety, " by Białystok students. And they reported that have time to help parents in household chores and do not neglect their youth is not imagined their life without a computer and the Internet.

Only 5.7% of respondents stated then that rarely behave in an aggressive manner when someone interrupted them in surfing the Internet. 5.3% of respondents have decided to very often on a smaller amount of sleep to be able to dedicate it to spend some time on the network. Respondents often did not want to immediately move away from the computer and then said they will spend in front of him even just one moment. Such a response has granted 10.9% of students, and 9.2% - "every time ".

Respondents rarely (6.5%) feel upset, they were in a bad mood or have had depression if they could not use the Internet. In the study population of Białystok Technical University revealed that 16% of respondents (13 women and 3 men) had symptoms of the Internet addiction, 18% of students (16 women and 2 men) had symptoms of the abstinence syndrome, 15% of the respondents (12 women and 3 men) - the symptoms of the "on-line" syndrome, and 16% of students (10 women and 6 men) were threatened with it. (Tab. 1)

In the students group of the Medical University, 5% of them (one woman and 4 men) had features suggestive of the Internet addiction, 2% of the respondents (2 men) had symptoms of the abstinence syndrome, 7% of the respondents (7 men) had symptoms "on-line" syndrome, and 9% of the students (one female and 8 male) were threatened with it. Data are given in Table 21.

Among the students of the University of Białystok, 13% of them (11 women and 2 men) had features suggestive of the Internet addiction, 13% (9 women and 4 men) had symptoms of the abstinence syndrome, 13% of the respondents (6 women and 7 men) manifested symptoms of the " on-line " syndrome, and 11% of the students (9 women and 2 men) was threatened with it. Data are shown in Table 1.

Overall, 11.3% of the respondents (25 women and 9 men) had symptoms of the Internet addiction, 11% of students (25 women and 8 men) had symptoms of the abstinence syndrome, 11.7% of the respondents (18 women and 17 men) had features of the "on-line" syndrome, and 12% (20 women and 36 men) were threatened with it. (Tab. 1)

Table 1. Occurrence of Internet addiction , abstinence syndrome, " on-line" or it risks the students depending on the institution and gender.

Test/ University	Test part A of questionnaire Diagnostic Questionnaire for Internet Addiction			Test part B of questionnaire Test of abstinence syndrome			Test part C of questionnaire Test for intensity " on-line"					
							symptoms „on-line "			risk „on-line"		
	F	M	Total	F	M	Total	F	M	Total	F	M	Total
Polytechnic N=100	13**	3	16 *	16^ ^^^	2	18 ^^	12	3	15	10	6	16
Medical University N=100	1	4	5	0	2	2	0	7	7	1	8	9
Białystok University N=100	11$	2	13	9^^ ^	4	13^	6	7	13	9	2	11
Total	25 #	9	34	25##	8	33	18	17	35	20	14	36

** p= 0.0047 ; $ p=0.021 ; * p=0.039 ; ^^^^ p<0.001 ; ^^p=0.0094 ; ^^ p=0.0014 ; ^ p= 0.013 ; # p<0.05 ; ## p<0.01 vs male (M)

Significant differences were found (Tab.1) between:

- students from the Polytechnic, who had more problems of the Internet addition compared with students of the Medical University (p = 0.0047)
- students from Polytechnic, who had more problems of the Internet addiction compared with students from Białystok University (p = 0.039)
- students from Białystok University, who had more problems of the Internet addition compared with female students of the Medical University (p = 0.021)
- students from Polytechnic, who had more symptoms of the abstinence syndrome than students from the Medical University (p= 0.0014)
- Białystok University students, who had more symptoms of the Internet addiction in comparison with students from the Medical University (p = 0.013)
- students from three universities, who had statistically more often symptoms of the Internet addition than men from these centers (p <0.05)
- students from three universities, who more symptoms of the abstinence syndrome than men from these centers (p <0.01).

Among students of Białystok Technical University, 14 students from the city and 2 from the village had the Internet addiction symptoms, 11 students from the city and 7 from the village had symptoms of the abstinence syndrome, 12 students from the city and 3 from the countryside had the "on-line" symptoms. (Tab. 2)

Table 2. Occurrence of Internet abuse, withdrawal symptoms, " on-line " or it risks the students depending on the institution and place of residence.

Test/ University	Test part A of questionnaire Diagnostic Questionnaire for Internet Addiction			Test part B of questionnaire Test of abstinence syndrome			Test part C of questionnaire Test for intensity " on-line"					
							symptoms „on-line "			risk „on-line"		
	F	M	Total	F	M	Total	F	M	Total	F	M	Total
Polytechnic N=100	14	2	16	11	7	18	12	3	15	7	9	16
Medical University N=100	4	1	5	1	1	2	6	1	7	7	2	9
Białystok University N=100	10	3	13	10	3	13	9	4	13	10	1	11
Total	28 ***	6	34	22	11	33	27 **	8	35	24	12	36

In the group of students of the Medical University, 4 students from the city and a village had the Internet addiction symptoms, only one student from the city and one from the village had the abstinence syndrome. Six students from the city and one from the countryside had the "on-line" symptoms. (Tab. 2)

Among students of the Białystok University, 10 students from the city and 3 from the village had the Internet addiction symptoms, 10 students from the city and 3 from the village had the abstinence syndrome, 9 from the city, and 4 from the countryside had the "on-line" symptoms (Tab. 2).

Significant differences were found (Tab.2) between:

- students from the cities, having symptoms of the Internet addition, and the villagers ($p < 0.001$)
- students from the cities, having symptoms of "the "on-line" syndrome and the villagers ($p = 0.0032$)

The simultaneous occurrence of the Internet addiction, and " on-line" syndrome was found in 8% of Polytechnic students, 6% of students of Białystok University, and not a single student of the Medical University (Tab. 3).

The simultaneous occurrence of the Internet addiction, and risk of " on-line" symptoms was found in 1% of Polytechnic students, 2% of students of Białystok University, and 2% of students of the Medical University. (Tab. 3) The simultaneous occurrence of the Internet addiction, and abstinence syndrome was reported in 2% of Polytechnic students, 2% of students of Białystok University, and 1% of the Medical University. (Tab. 3)

The simultaneous occurrence of abuse characteristics and features of the Internet "on-line" was found in 1% of students of the Białystok University, and not a single student of the Medical University and Polytechnic. (Tab. 3)

There were no significant differences between students of three Universities in the simultaneous occurrence of the abstinence and " on-line " syndrome.

Table 3. The occurrence of simultaneous Internet addition, abstinence syndrome, "on-line" and risk the students'.

Test/ University	Internet addition/ Abstinence syndrome/ " on -line"	Internet addition/ "on-line"	Internet addition/ Abstinence syndrome	Internet addition/ "on-line"
Polytechnic N=100	8	1	2	0
Medical University N=100	0	2	2	1
Białystok University N=100	6	2	1	0
Total	14	5	5	1

DISCUSSION

The main findings showed that about 10% of the students of the Medical University, Białystok University and Polytechnic had symptoms of the Internet addiction, the abstinence and "on-line" syndrome. The problem of Internet addiction more often affected students of the Polytechnic than others. Students living in the city showed more problems with the abuse of the Internet than students from the village.

Our findings are in accordance with previous reports from Asia [13-15] and Europe [16]. Among 352 medical students from China, 325 students surf the Internet, with a 92.3% total reported rate of Internet surfing. The rate of Internet surfing of men and women was 95.6% and 89.0% , respectively, and the rate for men was higher than for women 13. In our study, nearly all students (97.4%) were female, thus it was impossible to compare with these findings. Long-time Internet surfing (> 3 hours daily) has been reported more often by men than women. The prevalence rate of Internet Addiction Disorder was 16.2%, 20.6% for men, and 11.6% for women. These results are in agreement with our findings. Among Polish female students, the prevalence rate of Internet addiction was about 10% and was similar to the study by Liu et al. [13].

In another report, Ni et al. [14] assessed the prevalence of Internet addiction and influential factors associated with Internet addiction among freshmen college students from China. A rate of 6.44% of the participants surveyed showed Internet addiction. And these results were similar to the Augustynek report from 2004 [17].

According to the study by Augustynek, almost 6% of students met the criteria for Internet dependence and 4.5% met the criteria for Internet abuse.

In contrast, Fortson et. al. [18] found the highest percentage of students who met the criteria for Internet abuse among 411 undergraduate students at a southeastern regional university in the USA. Approximately 50% of the sample met the criteria for Internet abuse, and one quarter met the criteria for Internet dependence. Furthermore, men and women did not differ on the mean amount of time spent on the Internet each day. The study by Ko et al. [19] noted Internet addiction in 49% of males and 17% of females among Taiwanese students.

The items of the YDQ include withdrawal symptoms and conflict with others and oneself. Two small studies have investigated the psychiatric co morbidity associated with problematic Internet use. Shapira et al. [20] found that most subjects with problematic Internet use satisfied the criteria of a mood disorder. Furthermore, every other subject met the criteria for an impulse control disorder.

There could be many explanations for the associations between these factors and Internet addiction among students. One possible explanation is that Internet addiction is a behavioral manifestation of internal stress experienced by these young people. Three of the four significant factors associated with Internet addiction—drinking behavior, dissatisfaction with family, and experience of a stressful event—are stress-related variables. Drinking has long been identified as behavior significantly related to stress among adolescents, particularly young males [21] .

Suler [22] deemed that people's behavior in cyberspace was to satisfy the need of their sex drive, the need to alter their state of consciousness, the need for achievement and mastery, the need to belong, the need for relationships, the need for self-actualization and the transcendence of self.

Campbell has suggested that a high level of Internet use may for some individuals be a form of therapy to overcome social anxiety [23]. Another study 24 among 3557 freshmen college students in northwest China found that the students with Internet addiction had higher scores on the Self-Rating Depression scale and the Self-Rating Anxiety scale compared with those without an Internet addiction. Multiple logistic regression analyses showed that a single-parent family, the age of first exposure to Internet use, the age of the student, residing in a city, and homesickness were significantly associated with Internet addiction.

The study by Yen et al. [15] noted that adult ADHD was associated with Internet addiction. Attention deficit was the most associated symptom with Internet addiction, followed by impulsivity. Furthermore, the association between attention deficit and Internet addiction was more significant among female college students. Depression is correlated with more frequent use of the Internet to meet people, socially experiment, participate in chat rooms, and with less frequent face-to-face socialization [18].

Woronowicz says that 5 hours daily on the Internet may be dangerous [12]. In the current study, almost 32.8% of the students spend many hours on the Internet daily. Nearly 3.6% of the respondents used the Internet 5 hours daily, and 0.3% of the students 6-8 hours daily. Our results are in accordance with earlier reports [9,10,15,18,19].

Surfing on the Internet for a long time has some possible adverse effects upon academic performance, behavior and the custom of students 25. It is known that extended Internet use (very long working periods) may also cause somatic complaints (symptoms of pain of the hand/wrist, elbow, arm, neck and upper and low back) [26,27].

The present study has some limitations that will be reviewed in future studies. The greatest limit of the research is the small size of the sample: the validity of the conclusions drawn up to this point would certainly be increased with a larger sample. A second limitation is the lack of psychometric scales such as: the Personality Questionnaire, the Self-Rating Depression scale, the Self-Rating Anxiety Scale.

In the present study, about 10% of students of the Medical University, Białystok University and Polytechnic had symptoms of the Internet addiction, the abstinence and "on-line" syndrome. Further prospective studies should be performed in this important area.

CONCLUSIONS

1. Most of the students had a computer.
2. Students spend time using the computer a few hours a day, and from 11 to 21 hours per week.
3. The internet was used mostly for students to use e-mail and search for information.
4. Nearly, 10% of the students had the Internet addiction, abstinence syndrome and "on-line".
5. Students living in the city had more problems with Internet abuse than students from the village.
6. The problem of Internet addiction more often affected students of the Polytechnic than others.

POSTULATES

1. It should be monitored regularly issue threats from the Internet addiction among students.

2. It should be systematically raising awareness, especially in the adolescent population, the dangers of the Internet and to implement prevention programs for their users.

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