

# Internet Addiction Disorder in pupils and students of Krasnoyarsk (Russia) and Wrocław (Poland)

## Uzależnienia od Internetu wśród uczniów i studentów w Krasnojarsku (Rosja) i Wrocławiu (Polska)

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**Wstęp.** Zespół uzależnienia od Internetu (IAD) obejmuje niesklasyfikowaną jednostkę zaburzeń psychicznych, wynikającą z uzależnienia się użytkownika od wielogodzinnego przebywania w sieci. IAD może być definiowany, jako zaburzenie kontroli impulsów bez intoksykacji. Codzienny, wielogodzinny dialog z komputerem może stanowić czynnik ryzyka wielu dolegliwości somatycznych, może być też przyczyną skarg subiektywnych ze strony ośrodkowego układu nerwowego.

**Cel badań.** Ocena wpływu komputeryzacji na zdrowie psychiczne człowieka.

**Materiał i metodyka.** Badaniami objęto grupę 396 osób z Krasnojarska (Rosja) i grupę 100 osób z Wrocławia (Polska), w wieku od 13 do 30 lat (106 uczniów, 330 studentów i 60 ordynatorów). Do oceny stopnia nasilenia depresji oraz uzależnienia od Internetu wykorzystano arkusze samooceny takie, jak Inwentarz Depresji Beck'a (BDI) i Test Kimberly Young (KYT).

**Wyniki.** IAD rozpoznano w 25% przypadków badanych osób z Krasnojarska, z niewielką przewagą mężczyzn. Podobne wyniki uzyskano u studentów z Wrocławia, jednak że tutaj wykazano przewagę uzależnionych kobiet. IAD nie rozpoznano u nikogo z grupy kontrolnej. Wykazano istotną korelację dodatnią między stopniem nasilenia depresji oraz uzależnieniem od Internetu.

**Wnioski.** Wyniki badań sugerują, że wielogodzinna praca z komputerem może prowadzić do depresji. Osoby spędzające w Sieci ponad 40 godzin tygodniowo wykazywały objawy uzależnienia, zwłaszcza jeśli spędzały czas wyłącznie na internetowych rozrywkach. Rezultaty KYT korelowały dodatnio z wynikami testu Beck'a. Zwrócono także uwagę na mało znany fakt, że kobiety łatwiej popadają w uzależnienie niż mężczyźni.

**Słowa kluczowe:** uzależnienie od Internetu, objawy depresyjne, uczniowie, studenci, ordynatorzy

**Introduction.** Internet addiction disorder (IAD) is a type of a compulsive disorder. Addicted people showed the signs of compulsive internet use, habitually checking e-mails, websites and chat rooms. Everyday long-term contact with computer screens is an occupational risk, which induces various undesirable health consequences, including subjective complaints of central nervous system.

**Aim.** Influence of computerization on human mentality.

**Material & methods.** A group of 396 persons from Krasnoyarsk (Russia) and a group of 100 persons from Wrocław (Poland) aged 13-30 years (106 pupils, 330 students and 60 ward heads) were enrolled in the study. Self-assessment charts, such as e.g. Beck Depression Inventory (BDI) and Kimberly Young Test (KYT) were used.

**Results.** Among investigated persons from Krasnoyarsk IAD was recognised in 25% of cases. Internet users revealed a little bit higher frequency of IAD appearing among male. Slightly different results were obtained among students from Wrocław – in this study there was the prevalence of Net-addicted women. IAD was not recognized in any person from the control group. KYT score correlated proportionally with BDI results.

**Conclusions.** The results suggest that long-time work with computer may lead to depressive symptoms. Our observations are supposed to be the direct implications of the exposure of the VDT-operators to the harmful occupational factors resulting in functional disorders within the CNS, including IAD. It should be emphasize, that not all persons are prone to be addicted. Important role play a model of contact with computer, especially with Internet distraction.

**Key words:** Net-addiction, depressive symptoms, pupils, students, ward heads

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## Introduction

Internet is a medium bringing a brand-new dimension to human communication. More and more people take advantage of web sites for professional, educational and distraction reasons. Anonymity, comfort, easy access and low usage costs add to the reasons for a continuously growing demand for computer technology [1,2]. However, an excessive usage of online computer service (over 40 hours a week) can have negative influence on human mental condition. IAD symptoms with their all negative social and health consequences are similar to the ones observed in drug or alcohol addicts.

In spite of conspicuous advantages of the web site expansion, one should remember the negative aspects of this phenomenon, namely Internet Addiction Disorder (IAD). A psychologist, Kimberly Young from University of Pittsburgh-Brandford (USA) established the following IAD subtypes: cyber-sexual and cyber-relationship addiction, net compulsions, information overload and computer addiction [3].

Computer and Internet attracts millions of people worldwide. According to the statistical data, the number of computer addicts ranging from 6 to 70 years of age reaches approximately 5 million in the USA. The official European computer addict statistics lag behind. However, the data are supposed to be underestimated, because the addicted persons rarely look for specialist counseling. Currently in Russia there are only approximately 40 million of internet users, whereas there is over a billion of them worldwide. According to the latest reports 10% of them is Internet-addicted. The studies performed in Russia show that 4-6% of Internet users are Web-addicted and they are usually between 16-25 years of age. Despite the fact that IAD has not been officially classified in DSM-IV, the problem exists and is growing serious. In Poland first cases of Internet addiction were recognized in 1996 [4,5].

## Aims

The aim of the study was the influence of computerization on human mentality. Moreover, the assessment of implications between the long-time work with Internet and the harmful occupational factors resulting in functional disorders within the CNS.

## Materials

Study subjects in Krasnoyarsk – 396 persons: 106 pupils aged 13-17 years, 230 students aged 18-23 years and 60 ward heads aged 23-30 years.

Study subjects in Wroclaw – a group of VDT-operators (group I) comprised 50 students of Technical University (30 males and 20 females, age range: 20-25 years, mean age:  $22.3 \pm 1.47$  years). A 7-hour task of

the dialogue type was performed by these operators. A control group II comprised 50 students (30 males and 20 females) of Medical University, working with a computer occasionally. Both groups were matched for gender and age. In the control group mean age was  $23.5 \pm 1.42$  years.

## Methods

Self-assessment charts, such as e.g. Beck Depression Inventory (BDI) used in the present study, are considered to be of great usefulness in establishing a diagnosis of depression. It is very easy to apply such a tool. The examined subject is requested to complete the questionnaire which consists of 22 issues; for each of the questions you can choose only one answer (yielding 0-3 scores).

It is assumed that the outcome of the whole test exceeding 10 scores indicates depression [6]. This test concerns the previous day and enables to assess the psychological condition of the patient in the more objective manner. Although this scale is used as a self-assessment test, the reliable interpretation of the results can be performed exclusively by the person highly qualified in psychopathology. In our study, BDI was evaluated by a psychiatrist.

For detecting IAD, the self-assessment charts, e.g. Kimberly Young Test (KYT) may be used and it was used in the present study. It is very easy to apply such a tool. The examined subject is requested to complete the questionnaire, which consists of 8 issues; for each of the questions you can answer only yes or no (1 score). It is assumed that the outcome of the whole test exceeding 5 scores indicates IAD [7].

Statistical analysis: standard statistical Student t-test was applied for comparison of the two variables. A comparison analysis was performed using the Chi-square method. The values are presented as the mean  $\pm$  SD and a level of statistical significance was set at  $p=0.05$ . Non-parametric data was given as the absolute numbers or percentages.

## Results

### *Study subjects of Krasnoyarsk*

The results of the KYT outcomes are comprised in table I and table II.

The percentage distribution of females and males in the Net-addicted and Net-addiction free persons is comprised in the table II.

### *Students of Wroclaw*

The analysis of the KYT outcomes was the base for dividing the students into the Net-addicted and Net-addiction free persons. The results of this analysis are located in the table III.

Table I. Percentage distribution of Net-addicted and Net-addiction free pupils, students and ward heads

Tabela I. Procentowy rozkład osób uzależnionych i niezależnych od Internetu wśród uczniów, studentów i ordynatorów

Level of addiction	Pupils n=106 [1]	Students 3rd course n=140 [2]	Students 6th course n=90 [3]	Ward heads n=60 [4]	level of statistical significance
IAD – free	79 75.2%	109 78.1%	38 42.7%	47 77.8%	3:1 p<0.001
Low IAD	13 12.3%	7 5.2%	20 22.3%	10 17.2%	3:2 p=0.001
Middle IAD	11 10.5%	11 8%	29 32.6%	2 –	3:1 p=0.002 3:2 p<0.001
High IAD	4 –	13 8.7%	3 –	1 –	–

Table II. Percentage distribution of males and females in pupils, students and ward heads

Tabela II. Procentowy rozkład mężczyzn i kobiet wśród uczniów, studentów i ordynatorów

Investigated persons	Net-addiction free		Net-addicted person		Level of statistical significance
	Male [1]	Female [2]	Male [3]	Female [4]	
Pupils [n=106]	39 79.2%	46 77.2%	10 20.8%	11 22.8%	1:3 p<0.001 2:4 p<0.001
Students 3rd course [n=140]	28 60%	82 87%	18 40%	12 13.0%	2:4 p<0.001 3:3 p=0.008
Students 6th course [n=90]	23 47.9%	19 46.4%	26 52.1%	22 53.6%	–
Ward heads [n=60]	21 84%	26 73.5%	4 16%	9 26.5%	P1-3<0.001 P2-4<0.001

Table III. Results of KYT outcomes in students from group I and II

Tabela III. Wyniki KYT u studentów z grupy I i II

Scores	Percentage of investigated persons		
	Group I N=50	Level of statistical significance	Group II N=50
<5	40%	p<0.001	100%
5 – 7	50%	–	0
8	10%	–	0

Table IV. Results of BDI outcomes in students from group I and II

Tabela IV. Wyniki BDI u studentów z grupy I i II

Scores	Percentage of investigated persons		
	Group I N=50	level of statistical significance	Group II N=50
<10	40%	p<0.001	90%
10 – 15	50%	p<0.001	10%
16 – 19	10%	–	0

The analysis of the BDI outcomes in the students of group I and II is located in the table IV.

The comparative analysis with relation to the male and female percentage distribution demonstrating various states of Net-addiction showed evident distinctions – figure 1.

The statistically significant differences (p<0.001) were found in the subjects depicted in the figure 1.

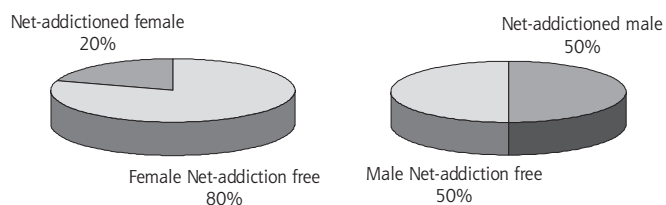


Fig. 1. Percentage of Net-addicted males and females in students from group I

Ryc. 1. Skład procentowy uzależnionych mężczyzn i kobiet u studentów z grupy I

### Conclusions

A lot of monographs on detrimental influence of computers on human organism and especially visual organ have been written so far. However, there are few reports on the influence of computerization on human mentality. The question of Net-addiction is increasingly frequent nowadays. According to American specialists, multi-hour Internet Web-browsing can make computer users addicted. Psychologists state that only 1-hour Web-browsing a day is safe for computer users. Persons who spend about 40 hours weekly in front of the computer screen, are deemed to be addicted [8].

The authors of this study took an effort to evaluate the influence of computers and Internet on mentality of the examined persons by means of simple but generally used psychological tests.

### Study subjects from Krasnoyarsk

The analysis of Internet addiction taking into consideration age and the length of study (table I) established that IAD was recognised in 25% of cases, most of them in the group of 6th - course students. The number of addicted persons was significantly higher (p<0.001) in this group than in others.

In all other groups, regardless of gender, the non-addicted persons (table 2) were in majority. However, the analysis, taking into account gender of the Internet users, revealed equal frequency of IAD appearing among female and male pupils and 6th – course students. In the group of 3rd – course students the males constituted the majority at p=0.008 (table II). Those persons were characterized by moderate and low degrees of addiction. In the light of the above data these students could be recognised as the group of higher risk showing an increased susceptibility to IAD.

### Students from Wrocław

Slightly different results were obtained among students from Wrocław. However, it must be highlighted that this group was much more homogenous than the one from Krasnoyarsk, taking into consideration age, activities and time spent on Internet dialogue. As

mentioned before the analysis of the KYT outcomes was the base for dividing the students into the Net-addicted and Net-addiction free persons.

In the group I the number of addicted persons reached 60%, 10% of them with a high degree of addiction, while in the group II none of the respondents fulfilled the criteria allowing to recognize the addiction. The results in the students of group I, obtained by means of BDI, confirmed the preliminary diagnosis of depressive syndrome, especially depressed mood, lack of energy and inability of experiencing joy (at least a 2-week duration). The BDI results correlated proportionally with the KYT score – the more pronounced symptoms of depression, the more pronounced symptoms of IAD (table III and IV). At this stage of the research, it is extremely difficult to find out which of these phenomena are primary, because persons diagnosed with affective disorders seem to be more inclined to lapse into addiction, but on the other hand every addiction can be a cause of depressive states [9].

In contrast to investigations in Krasnoyarsk, in our study there was the prevalence of Net-addicted women. IAD was recognized in 80% of women and 50% of men (figure 1). These results indicated that women are more inclined to be addicted to Internet than men, which is not a generally known fact.

As it results from the table 3, not all persons from the group I were addiction-prone, though the average Internet-browsing time for all members of the group I was approximately the same ( $7 \pm 1.5$  hours a day). The essential difference concerned the model of contact with the computer, especially with Internet distraction. Persons from this group spent most of their time browsing the multimedia, web sites and the least of the time visiting Chat Rooms. The excessive usage of online computer service (over 40 hours a week) can have negative influence on human

mental condition. According to Kimberly Young, the pioneer of research in this field, the IAD symptoms with their all negative social and health consequences are similar to the ones observed in drug or alcohol addicts [7]. On the contrary, IAD was not recognized in any person from the control group. The depressive symptoms, which were found in 5 persons (10%), were not connected with Net-addiction (table 3 and 4). Persons from the group II used computers only for education. They spent about 2 hours weekly for Internet distraction.

Computer is an amazing and brilliant invention of the 20th century, which has made human work more efficient. Internet has many attractive features, such as: anonymity (equalizing social status, manipulation of own identity), comfort (retrieving information, socializing with other people or making financial transactions without leaving home) and low usage cost. In spite of undeniable benefits, computer revolution is assumed to endanger human health, but stress and addiction to computer use is often ignored. Our observations are supposed to be the direct implications of the exposure of the VDT-operators to the harmful occupational factors resulting in functional disorders within the CNS. Though the Net-addiction is not included in DSM-IV classification, it exists and will become increasingly serious in course of computerization process. Studies on Internet addiction were originated in the USA by Dr Kimberly Young, who presented the first research on Internet addiction in 1996. She has likened Internet addiction to addictive syndromes similar to impulse-control disorders on the Axis I Scale of the DSM. She also created the Center for Internet Addiction Recovery, which has been devoted to helping those who suffer from Internet addiction. The psychiatrists will have to rank the Net-addiction among the officially accepted addictions.

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