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Original Research Article

Problematic computer game use as expression of Internet addiction and its association with self-rated health in the Lithuanian adolescent population

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ARTICLE INFO

Article history:
Received 28 October 2015
Received in revised form
16 March 2016
Accepted 7 April 2016
Available online 22 April 2016

Keywords:
Internet addiction
Computer games
Adolescents
Self-rated health

ABSTRACT

Background and objective: Computers and the Internet have become an integral part of today's life. Problematic gaming is related to adolescent's health. The aim of our study was to evaluate the prevalence of Internet addiction among 13–18-year-old schoolchildren and its relation to sex, age, and time spent playing computer games, game type, and subjective health evaluation.

Materials and methods: A total of 1806 schoolchildren aged 13–18 years were interviewed. The evaluation of Internet addiction was conducted by the Diagnostic Questionnaire according to Young's methodology. The relation between the choice of computer games type, time spent while playing computer games and respondents' Internet addiction were assessed by using multivariate logistic regression analysis.

Results: One-tenth (10.6%) of the boys and 7.7% of the girls aged 13–18 years were Internet addicted. Internet addiction was associated with the type of computer game (action or combat vs. logic) among boys (OR = 2.42; 95% CI, 1.03–5.67) and with the amount of time spent playing computer games per day during the last month (≥5 vs. <5 h) among girls (OR = 2.10; 95% CI, 1.19–3.70). The boys who were addicted to the Internet were more likely to rate their health poorer in comparison to their peers who were not addicted to the Internet (OR = 2.48; 95% CI, 1.33–4.62).

Conclusions: Internet addiction was significantly associated with poorer self-rated health among boys.

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Peer review under the responsibility of the Lithuanian University of Health Sciences.
http://dx.doi.org/10.1016/j.medici.2016.04.002

1. Introduction

Numerous studies have analyzed the influence of health-harmful behavior, such as alcohol consumption and smoking, and overweight on health outcomes of adolescents [1–3]. Recent studies have showed that excessive gaming and Internet addiction are parts of new harmful health behavior for adolescents [4,5]. Computers and the Internet have become an integral part of today's life. Each generation has its own values, hobbies, and leisure activities. Internet and computer games take up a large part of children's time in recent years [6,7]. Games and the Internet are closely related as computer games became online games. The Internet addiction of adolescents and a long time spent playing games are related to age, gender, social and personal characteristics [8,9]. Moreover, excessive gaming can affect mental health, depression, poor sleep quality, worsened academic achievements, low wellbeing and high loneliness [10,11]. On the other hand, problematic gaming is related to somatic health problems. Internet addiction is related to juvenile overweight, physical inactivity, musculoskeletal and vision disorders [3,12]. However, little is known about the incidence and behaviors related to the Internet addiction. The aim of our study was to evaluate the associations between self-rated health and Internet addiction.

2. Materials and methods

The study design was cross-sectional. The study protocol was approved by the Department of Municipality Administration Education and Culture Education and Education Division (Protocol No. 35-2-703) and the Regional Biomedical Research Ethics Committee (Protocol No. BE-2-61). Parental consent was obtained from each participant of the study.

2.1. Sample and setting

A multilevel sampling method (county, school, and class) [13] was employed in composing a nationally representative sample in Lithuania (Kaunas County). According to the data provided by the Ministry of Education and Science, there were 56 municipality schools with 14,589 schoolchildren from grade 9 to grade 11 in Kaunas County. Sample power analysis revealed that determined sample size was 1450 schoolchildren. In our survey, we randomly selected 20 of 56 schools. Of the 240 classes in the selected schools, 80 classes (every third) were randomly selected. Thus, a total of 1806 registered schoolchildren from grade 9 to grade 11 (aged 13–18) were invited to participate in this study. The response rate was 95.8% ($n = 1730$). Information from 76 schoolchildren was included in the survey mainly due to schoolchildren being absent from school when their class completed the survey or due to the fact that less than half of the questionnaire questions had been completed.

The study population consisted of 50.2% ($n = 869$) boys and 49.8% ($n = 861$) girls. The mean age of male and female respondents was 15.86 ± 0.94 and 15.81 ± 0.93 years, respectively.

2.2. Data collection

The questionnaire was distributed by the researcher in selected schools during 2012. The schoolchildren had the option to refuse participation in the survey. The researcher did not attempt to persuade any potential respondent to participate.

The survey data included information about what grade and school each schoolchild attended, which made it possible to conclude that the absent schoolchildren were randomly distributed between the schools. The survey was conducted with voluntary and anonymous participation by respondents.

2.3. Questionnaire

A self-report questionnaire was employed in this study. The questionnaire consisted of four questions regarding socio-demographic data (gender, age, school, and grade); 8 items regarding Internet addiction; 5 questions regarding habits related to choice of computer game type and time spent playing computer games, and 1 question regarding self-rated health. In order to determine the amount of time that respondents had spent playing computer games, schoolchildren were asked ''How many hours per day did you play computer games during the last month?'' In order to identify heavy computer game players, the following response options were provided: <5 h and ≥ 5 h [14]. The respondents who played computer games were allowed to identify one of their most favorite computer games, which they usually play. The most popular online games were *World of War Craft*, *World of Tanks*, *Grand Theft Auto*, *Quick Fire Pool*, etc. According to the respondents' answers about their most favorite computer game, the schoolchildren were classified in two groups: (1) schoolchildren with a preference for logic computer games; (2) schoolchildren with a preference for action or combat computer games.

The evaluation of computer-Internet addiction was conducted by applying the short 8-item version of the Diagnostic Questionnaire by Young [15]. This version of the Diagnostic Questionnaire by Young was validated and adapted for the Lithuanian adolescents' population. The cutoff score of five or more criteria was consistent with the number used to diagnose pathological gambling [15]. If the participant answered ''yes'' to five or more criteria, he/she was classified as a dependent Internet user (Internet addiction), and the remainder were classified as nondependent Internet users (no Internet addiction).

The responders were categorized into two groups according to their self-rated health: (1) excellent, very good, and good; and (2) poor and very poor.

2.4. Statistical analysis

Statistical analysis of data was performed using the SPSS 13.0 software package for Windows. Cronbach's alpha was used as estimate for the validity Internet addiction test (alpha coefficient 0.83). The data were analyzed by assessing the differences of results in relation to gender, age and the amount of time spent while playing computer games with respect to the respondents' Internet addiction and self-rated health. Z