JH Kim 金真希
SM Griffiths 葛菲雪
CH Lau 劉振康
BYF Fong 方玉輝
J Lam 伍璟琳

Pathological Internet use and associated factors among university students in Hong Kong

Key Messages

1. Among university entrants, the prevalence of pathological Internet use (PIU) increased more than three-fold (from 5.0 to 15.7%) after 18 months of university life. Psycho-social factors such as depression, life dissatisfaction, and use of the Internet for recreational purposes were associated with the development of PIU.
2. University health workers should be aware that PIU is associated with inferior mental well-being, increased sleeping disorders, and deterioration of family relationships. Special attention should be given to Mainland Chinese students and those with pre-existing psychological problems, as they are more prone to developing PIU.
3. Most university students with PIU were unaware of the health implications of the condition and thus not motivated to seek help. Health workers must take a pro-active approach.

Introduction

Some university students, particularly those living away from home, engage in unhealthy behaviours (erratic sleeping habits, inadequate physical exercise, poor diet, and uncontrolled alcohol consumption), which often persist or even become worse in adulthood. Pathological Internet use (PIU) is defined as Internet use that causes personal problems, withdrawal symptoms, and mood-altering states. In United Kingdom, up to one fifth of university students suffered from symptoms consistent with PIU.[1] According to the Hong Kong Census and Statistics Department, in 2009 Internet use was almost ubiquitous among individuals aged 15 to 24 years (99.1%), those with post-secondary education (97.0%), and among students (99.3%). Thus, university students in Hong Kong are likely to be at risk of PIU. Media consumption such as television viewing is associated with decreased physical activity, poor diet, and increased obesity. Pathological Internet use is likely to be an even more detrimental health hazard, as it is associated with increased social isolation, mood disorders, and sleep problems.[2,3] This study aimed to determine the prevalence and risk factors of PIU among university students in Hong Kong and examine its association with health problems. The ensuing findings could provide insights for intervention and prevention of PIU in university students.

Methods

This study was conducted from January 2009 to January 2010. The study population comprised full-time undergraduate entrants of The Chinese University of Hong Kong in 2007. Non-Chinese speaking students or exchange students were excluded. In July 2007, self-administered questionnaires were randomly delivered to 50% of all registered entrants. Completed questionnaires were collected when the students presented for health check in August 2007. Student ID numbers and email addresses were collected for use during follow-up. In February 2009 (1.5 years later), the students were invited through email to complete a follow-up online survey. To increase the response rate, HK$40 cash coupons were provided to students who completed the survey. Several reminders were sent to non-respondents through email and instant messengers.

During the baseline survey in 2007, student ID numbers, email addresses, instant messenger accounts, and telephone numbers were collected for case identification and follow-up. Socio-demographics such as major of study, age, gender, birthplace, residential status, household income, parental education level, and academic results were collected. A validated 26-item Chen's Internet Addiction Scale (CIAS) was used to assess PIU; a score of ≥64 was considered diagnostic of PIU.[4] Other Internet-related questions included average weekly hours of Internet use, preferred online activities, self-perceived impact of the Internet, and having met strangers from the Internet. Lifestyle factors including sleep patterns and physical activity levels were collected. Respondents were considered physically active if they reported having 20 minutes of vigorous activity at least 3 days per week or 30 minutes of moderate activity at least 5 days per week. Daytime sleepiness was assessed by the Hong Kong Chinese version of the Epworth's Sleepiness Scale. Mental well-being was assessed by the Satisfaction with Life Scale, Rosenberg's Self-Esteem Scale (6-item version),

Hong Kong Med J 2013;19(Suppl 9):S9-11

The Chinese University of Hong Kong: School of Public Health and Primary Care
JH Kim, SM Griffiths, CH Lau, J Lam
University Health Service
BYF Fong

HHSRF project number: 06070471

Principal applicant and corresponding author:
Prof Jean H Kim
4/F, School of Public Health, Prince of Wales Hospital, Shatin, NT, Hong Kong SAR, China
Tel: (852) 2252 8889
Fax: (852) 2145 7489
Email: jhkim@cuhk.edu.hk

social anxiety subscale of the Self-Consciousness Scale, and Center for Epidemiologic Studies Depression Scale (short form) [CESD-10].

The follow-up questionnaire in February 2009 contained most items of the baseline questionnaire and the following additional items: present living quarters (student hostel or not), academic results (the first-year grade point average), time spent on studying in a week, satisfaction with various aspects of university life, self-perceived level of problematic Internet use, and the Short Form-12 health survey to measure overall health status.

The prevalence and cumulative incidence of PIU was determined. Stepwise multiple logistic regression analysis was used to assess the association between potential risk factors and PIU, after adjusting for socio-demographic factors. Association of different factors with PIU was assessed using the Chi-square test (for categorical outcomes) and independent sample *t*-test (for continuous outcomes).

Results

In the 2007 baseline survey, 1262 students completed the questionnaire (response rate, 78.2%) and 1027 (81.4%) of them completed the follow-up survey in 2009. There were no significant differences between 2007 and 2009 participants in terms of gender, age at matriculation, origin (local vs. mainland China students), or field of study.

The prevalence of PIU in 2007 and 2009 were 5.0% and 15.7%, respectively. Using a stepwise logistic regression model, risk factors for PIU were being a Mainland Chinese student (OR=1.89, P=0.026), dissatisfaction with university life (OR=1.98, P=0.012), higher baseline levels of depressive symptoms (OR=1.08 per 1 point increase in CESD-10 score, P<0.001), and using the Internet for recreational and interactive activities such as gaming, gambling, chatting, downloading music and videos (OR=1.68-6.70, P<0.05).

Using logistic regression analysis, PIU was positively associated with late sleeping (sleep after 1 am on a weekday; OR=1.85, P=0.004) and meeting strangers from Internet (OR=3.83, P<0.001). Students with PIU were more likely to suffer from daytime sleepiness (OR=1.57, P=0.016). The association between PIU and physical inactivity was not significant (P=0.162). Although PIU students spent less time studying (25.5 vs. 29.2 hour/week, P=0.22), their mean grade point average was similar to non-PIU students (3.02 vs. 3.06, P=0.267). Students with PIU had worse physical and mental well-being, as indicated by significantly lower scores for SF-12 physical and mental components and life satisfaction, and higher levels of social anxiety, stress, and depression (P<0.05).

Regarding self-perceived PIU status, among non-PIU students, 63.7% did not regard their Internet use to be a problematic behaviour, 35.2% thought they were 'somewhat problematic', and only 1.1% reported it as 'very problematic'. The corresponding percentages of PIU students were 28.4%, 56.8%, and 14.8%. Among non-PIU students, 68.9% expressed lack of interest in learning skills to control their Internet use (compared to 46.2% in the PIU group), whereas 29.2% reported that they were 'somewhat interested' (versus 42% in the PIU group) and 2.0% were 'very interested' (versus 11.8% in the PIU group).

Discussion

The prevalence of PIU in these university entrants increased more than three-fold (from 5.0 to 15.7%) after 18 months of university life. Development of unhealthy lifestyles during university is attributable to greater autonomy and less stringent parental control.[5] This was partially supported by the higher prevalence of PIU among students from Mainland China, but the association between hostel living and PIU was not significant. This suggests that lower parental supervision per se was not a risk factor for PIU among Hong Kong university students. Pathological Internet use was associated with psychosocial factors and use of the Internet for recreational activities such as online gaming and gambling. The associations between PIU and baseline depressive symptoms and life dissatisfaction suggest that psychosocial factors affected the development of PIU among Hong Kong university students. Similar to substance abuse, pathological Internet use may be a convenient coping mechanism for dysphoric feelings. In addition, PIU was associated with adverse health effects in physical, mental, and social health dimensions. Health workers including student counsellors and clinical staff should be mindful of this emerging health issue in students who seek assistance for psycho-social or even physical health problems.

Lack of awareness of PIU and its potential effects on other health domains was common among university students. Therefore, they are unlikely to seek help to curtail such behaviour. Being unaware appears to be a key barrier to prevent PIU. The health education curriculum of secondary schools should include PIU to foster awareness of its potentially deleterious consequences.

Conclusions

Pathological Internet use is an underappreciated health problem affecting university students in Hong Kong. It is a risk factor for common physical and psychosocial problems. Primary prevention of PIU should start in the early period of university life, given its relatively low prevalence at that stage. University health workers should become acquainted with this common health issue, and consider Internet use patterns when dealing with student health issues. Further attention should be given to vulnerable groups, such as non-local students and those with pre-existing mental health problems.

Acknowledgements

This study was supported by the Health and Health Services Research Fund, Food and Health Bureau, Hong Kong SAR Government (#06070471). We also thank the Li Ka Shing Foundation, which supported the baseline survey in 2007 and all participants who replied to the survey and all student helpers who worked for the study.

References

1. Niemz K, Griffiths M, Banyard P. Prevalence of pathological Internet use among university students and correlations with self-esteem, the General Health Questionnaire (GHQ), and disinhibition. Cyberpsychol Behav 2005;8:562-70.
2. Leung L. Net-generation attributes and seductive properties of the internet as predictors of online activities and internet addiction. Cyberpsychol Behav 2004;7:333-48.
3. Kim K, Ryu E, Chon M, et al. Internet addiction in Korean adolescents and its relation to depression and suicidal ideation: a questionnaire survey. Int J Nurs Stud 2006;43:185-92.
4. Ko CH, Yen JY, Yen CF, Chen CC, Yen CN, Chen SH. Screening for Internet addiction: an empirical study on cut-off points for the Chen Internet Addiction Scale. Kaohsiung J Med Sci 2005;21:545-51.
5. Raymore LA, Barber BL, Eccles JS. Leaving home, attending college, partnership and parenthood: the role of life transition events in leisure pattern stability from adolescence to young adulthood. J Youth Adolesc 2001;30:197-223.