Time to call for a global public health approach in prevention of the onset and progression of problematic gaming

Commentary on: Policy responses to problematic video game use: A systematic review of current measures and future possibilities (Király et al., 2018)

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Problematic video gaming is a global problem. Policy and programs responses to the problem vary among countries, partly due to cultural differences in the east and the west, meaning that caution is needed in drawing comparisons. Promoting parental education and positive youth development would be a useful approach to curb problematic behavior among children and adolescents. We suggest using a public health approach, based on our experience in dealing with commodities, which are harmful to health.

Keywords: problematic video game use, Internet, gaming, public health

INTRODUCTION

Király et al. (2018) conducted a systematic review of current measures of problematic video gaming in western and eastern countries. The paper provides a comprehensive summary of prevention, treatment, and policy approaches to address problematic video gaming. The authors acknowledge that there is limited information on the effectiveness and evaluation of these policies. In this paper, we share our experiences of participating in a series of annual expert meetings organized by the World Health Organization (WHO) on this topic and our experiences in Hong Kong.

EFFECT OF VIDEO GAMING ON CHILDREN AND ADOLESCENTS

Internet and related electronic products play an integral role in our daily lives, from communication to entertainment and work. Relevant business sectors, including the gaming industry, are trying to make use of this opportunity to expand their market share. As mentioned in Király et al.'s paper, the objective of the gaming industry is to make profits through its products, so game developers and publishers create attractive and enjoyable games to increase the number of players and encourage them to continue playing (i.e., the game becomes "addictive"). Negative consequences present in a significant minority of gamers, and the overall health burden to these individuals (who tend to be children and adolescents) and the community should not be underestimated (Anderson et al., 2010; Holtz & Appel, 2011).

SITUATION IN HONG KONG

Telecommunication penetration rates in Hong Kong are among the highest in the world. In March 2018, over 92% of households used a fixed broadband service with 18.39 million people subscribing to mobile services (i.e., 248% of the total population of 7.4 million people; Office of the Communications Authority, The Government of the Hong Kong Special Administrative Region, 2018). The proportion of children aged 10–14 years old who spend 20–50 hr per week on the Internet increased from 25.4% in 2007 to 42.0% in 2017. Furthermore, estimates for those aged 15–24 years old similarly increased from 43.9% in 2007 to 57.8% in 2017. Ninety-two percent of students owned a smartphone, spending an average of 13.1 hr per week on the Internet for social purposes (Census and Statistics Department, Hong Kong Special Administrative Region, 2007, 2017). These figures indicate that a growing and significant proportion of children and adolescents, as well as the general population, are exposed to and engaging with the digital world.

Quick access to information and ease of communication mean that our dependence on technology is likely to increase. In fact, in our survey on the use of Internet and electronic screen products conducted in Hong Kong in

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2017, 19% secondary school students indicated that they considered themselves to be addicted to the Internet. Comparing the results of a similar survey conducted in 2014, we observed an increase in the proportion of self-reported adverse effects due to the use of Internet and electronic screen products. Specifically, among primary school students, 42% of students in 2014 versus 53% in 2017 reported quarreling with parents, and 26% in 2014 versus 36% in 2017 reported sleep deprivation. Among secondary school students, 63% of students in 2014 versus 70% in 2017 reported quarreling with parents, and 63% in 2014 versus 67% in 2017 reported sleep deprivation (Department of Health, The Government of the Hong Kong Special Administrative Region, 2018).

FROM A MENTAL HEALTH DISORDER TO A GLOBAL PUBLIC HEALTH MATTER

Since 2014, in response to concerns expressed by professional groups, the WHO Department of Mental Health and Substance Abuse has organized a series of annual expert meetings involving WHO collaborating centers, public health practitioners, academics, and clinicians to examine the public health relevance of health conditions associated with excessive use of the Internet and other communication and gaming platforms. We participated in these meetings.

The first meeting (Tokyo, Japan) in 2014 discussed the available evidence on the epidemiology, nature, phenomenology, outcomes, and public health implications of health conditions associated with excessive use of the Internet, smartphones, and similar electronic devices. The second meeting (Seoul, Republic of Korea) in 2015 discussed the spectrum, taxonomy, and clinical descriptions of behavioral disorders associated with excessive use of the Internet and other communication and gaming platforms within the conceptual framework of disorders due to addictive behaviors and the context of the 11th revision of International Classification of Diseases (ICD-11).

The third meeting (Hong Kong SAR, China) in 2016 identified policies and programs developed and implemented in different countries of the world. During this meeting, we observed marked variability between countries and jurisdictions in prevention and treatment approaches to disorders and health conditions associated with excessive gaming and Internet use, with little work globally conducted on prevention. Finally and most recently, the fourth meeting (Istanbul, Turkey) in 2017 focused on the conceptual and clinical validity of gaming and gambling disorders, and discussed a methodology to develop two new screening tools for gaming disorder (GD) and gambling disorder.

ICD-11 was released by the WHO on June 18, 2018 and recognized "GD" as a mental health condition for the first time (WHO, 2018). The launch of these new diagnostic guidelines facilitates identification of those with problematic gaming patterns and holds promise for promoting the development of national healthcare systems to provide appropriate treatment services. For the significant promotion of gamers who develop problems, the inclusion of GD in ICD-11 helps draw attention to the seriousness of problematic gaming and holds promise of promoting the issue on national health policy agendas and raising public awareness (Scutti, 2018).

A GLOBAL PHENOMENON

In recent years, there has been increasing global recognition that excessive online video gaming may lead to marked functional impairment and psychological distress for a significant minority of players (Kim, Namkoong, Ku, & Kim, 2008; King & Delfabbro, 2014; Turel, Romashkin, & Morrison, 2016). As Király et al. (2018) note, despite ongoing debates about conceptualization, it appears to be well recognized among scholars that problematic gaming exists. Recently, the prevalence of GD was estimated to be 10%–15% in Asian countries and 1%–10% in western countries (Saunders et al., 2017). The discrepancy in estimates may be explained, at least in part, by cultural differences and the absence of a standard assessment tool. A recent systematic review noted that there were marked variations in policies and prevention approaches in different countries for disordered and hazardous gaming and Internet use (King et al., 2017). We acknowledge the points raised in Király et al.'s paper that the stringent rules and regulations prohibiting Internet access in some eastern countries would not be accepted in western countries.

The development of problematic gaming is a complex issue, because gaming, unlike other commodities such as tobacco and alcohol that are harmful to health, is associated with some benefits, which include spatial skill improvements, enhanced creativity, and problem-solving skills, and smaller chance to have peer-relationship problems (Granic, Lobel, & Engels, 2014; Kovess-Masfety et al., 2016). In a recent literature review published by UNICEF, it is noted that digital technology can have both positive and negative effects on child's well-being, depending on the activity and length of time. Determining how much time is too much depends on the age of the children, their individual characteristics, their culture, and broader life context (Kardefelt-Winther, 2017). In view of the complexity of the issue and cultural differences, caution should be exercised when drawing conclusions or comparisons between different countries.

PUBLIC HEALTH IMPLICATIONS OF PROBLEMATIC GAMING

Problematic gaming is associated with a range of negative consequences, such as cessation of hobbies or external activities/social isolation, reduced sleep time or day–night reversal, poor academic or job performance, irritability, aggression, family conflicts, low self-esteem, and low daily life satisfaction (Achab et al., 2011; Chappell, Eatough, Davies, & Griffiths, 2006; Chuang, 2006; Gentile, 2009; Higuchi et al., 2017; Ko, Yen, Chen, Chen, & Yen, 2005; Mihara et al., 2016; Rehbein, Kleimann, & Mössle, 2010; Torres-Rodríguez, Griffiths, Carbonell, Farriols-Hernando, & Torres-Jimenez, 2017; Young, 2009). A universal prevention approach, which lowers the likelihood of the

development of problematic behavior in the total population, is likely to be useful in curbing the total number of problematic gamers. Universal prevention is widely used in other substance abuse disorders, with scientific evidence supporting the effectiveness of prevention programs and policies (Mewton et al., 2018; US Department of Health and Human Services, 2016). Having said that, if a standardized screener was available, high-risk individuals could be identified for effective intervention as a parallel public health measure. Accordingly, a selective or targeted prevention approach, focusing on such high-risk individuals, may also be helpful.

Two systematic review papers (King et al., 2017; Vondráčková & Gabrhelík, 2016) found that current prevention approaches mainly focus on children and adolescents to promote healthier Internet use habits, using a psychoeducational program within a school-based or family-based setting. The authors emphasized that evidence-based approaches are essential for delaying the onset and minimizing the potential progression of problematic gaming.

A series of studies and surveillance reports in Europe and the United States indicate that children are going online at an increasing younger age, and children and adolescents are online daily (Holloway, Green, & Livingstone, 2013; Ofcom, 2017; Rideout, 2017). Working with relevant sectors (e.g., schools and governments) and professionals (e.g., primary care doctors, mental health professionals, and policymakers) is important to achieve change.

PARENTAL INVOLVEMENT IN THE PREVENTION OF EXCESSIVE GAMING

Several studies have examined the risk and protective factors of Internet addictive behavior among children and adolescent (Cash, Rae, Steel, & Winkler, 2012; Koo & Kwon, 2014; Mak et al., 2014; Shek, Sun, & Merrick, 2012). Parental supervision has been found to be an important protective factor from Internet and gaming addiction, and is most influential among younger age groups, where parents are likely to have a greater influence (Koo & Kwon, 2014).

We encourage parents to develop and empower their children's awareness and self-control. As children grow, parents may adjust their degree of supervision and delegate autonomy to their children, according to their maturity and demonstrated levels of self-control (Department of Health, The Government of the Hong Kong Special Administrative Region, 2014). The continued use of effective parenting principles and skills can help maintain good parent–child relationship and the healthy development of children. Parents should encourage other leisure-time activities outside of gaming. Parental education and positive youth development are currently being promoted in Hong Kong (Department of Health, The Government of the Hong Kong Special Administrative Region, 2014).

CONCLUSIONS

Excessive gaming impacts a significant minority of gamers, particularly children and adolescents, across the globe and is associated with marked functional impairment and psychological distress. In an increasing number of countries and jurisdictions, the problem has reached the magnitude of a significant public health concern. Since 2014, the WHO has undertaken a series of activities to investigate the public health implications of behavioral addictions. With the recent release of ICD-11 and inclusion of GD as a disorder for the first time, multidiscipline development of prevention approaches to delay the onset and progression of problematic gaming is urgently required.

While the field of gaming is still in its infancy, we can learn lessons from more established fields, which deal with commodities that are harmful to health (e.g., tobacco, alcohol, unhealthy food, and gambling). Furthermore, collaborating and working with various stakeholders and organizations hold promise for developing effective policy and program responses to address problematic video gaming.

REFERENCES

Achab, S., Nicolier, M., Mauny, F., Monnin, J., Trojak, B., Vandel, P., Sechter, D., Gorwood, P., & Haffen, E. (2011). Massively multiplayer online role-playing games: Comparing characteristics of addict vs non-addict online recruited gamers in a French adult population. *BMC Psychiatry, 11*(1), 144. doi:10.1186/1471-244X-11-144

Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A., Rothstein, H. R., & Saleem, M. (2010). Violent video game effects on aggression, empathy and prosocial behavior in eastern and western countries: A meta-analytic review. *Psychological Bulletin, 136*(2), 151–173. doi:10.1037/a0018251

Cash, H., Rae, C. D., Steel, A. H., & Winkler, A. (2012). Internet addiction: A brief summary of research and practice. *Current Psychiatry Reviews, 8*(4), 292–298. doi:10.2174/157340012803520513

Census and Statistics Department, Hong Kong Special Administrative Region. (2007). *Information technology usage and penetration* (Report No. 32). Retrieved June 27, 2018, from https://www.statistics.gov.hk/pub/B11302322007XXXXB0100.pdf

Census and Statistics Department, Hong Kong Special Administrative Region. (2017). *Information technology usage and penetration* (Report No. 62). Retrieved June 27, 2018, from https://www.statistics.gov.hk/pub/B11302622017XXXXB0100.pdf

Chappell, D., Eatough, V., Davies, M. N. O., & Griffiths, M. (2006). EverQuest – It's just a computer game right? An interpretative phenomenological analysis of online gaming addiction. *International Journal of Mental Health and Addiction, 4*(3), 205–216. doi:10.1007/s11469-006-9028-6

Chuang, Y. C. (2006). Massively multiplayer online role-playing game-induced seizures: A neglected health problem in Internet addiction. *CyberPsychology & Behavior, 9*(4), 451–456. doi:10.1089/cpb.2006.9.451

Department of Health, The Government of the Hong Kong Special Administrative Region. (2014). *e-Report: Report of advisory group on health effects of use of Internet and electronic screen products*. Retrieved June 27, 2018, from http://www.studenthealth.gov.hk/english/internet/report//files/e_report.pdf

Department of Health, The Government of the Hong Kong Special Administrative Region. (2018). *General situation of use of Internet & electronic screen products among Hong Kong students and the World Health Organization's suggestion on 'Gaming Disorder'*. Retrieved June 27, 2018, from http://www.studenthealth.gov.hk/tc_chi/internet/files/healthy_use_of_internet_ppt_8_feb_2018.pdf

Gentile, D. (2009). Pathological video-game use among youth ages 8 to 18: A national study. *Psychological Science, 20*(5), 594–602. doi:10.1111/j.1467-9280.2009.02340.x

Granic, I., Lobel, A., & Engels, R. C. (2014). The benefits of playing video games. *American Psychologist, 69*(1), 66–78. doi:10.1037/a0034857

Higuchi, S., Nakayama, H., Mihara, S., Maezono, M., Kitayuguchi, T., & Hashimoto, T. (2017). Inclusion of gaming disorder criteria in ICD-11: A clinical perspective in favor. Commentary on: Scholars' open debate paper on the World Health Organization ICD-11 Gaming Disorder proposal (Aarseth et al.). *Journal of Behavioral Addictions, 6*(3), 293–295. doi:10.1556/2006.6.2017.049

Holloway, D., Green, L., & Livingstone, S. (2013). *Zero to eight. Young chidren and their Internet use. LSE*. London, UK: EU Kids Online. Retrieved June 27, 2018, from http://eprints.lse.ac.uk/52630/

Holtz, P., & Appel, M. (2011). Internet use and video gaming predict problem behavior in early adolescence. *Journal of Adolescence, 34*(1), 49–58. doi:10.1016/j.adolescence.2010.02.004

Kardefelt-Winther, D. (2017). *How does the time children spend using digital technology impact their mental well-being, social relationships and physical activity? An evidence-focused literature review* (Innocenti Discussion Paper 2017-2). Florence, Italy: UNICEF Office of Research-Innocenti. Retrieved June 27, 2018, from https://www.unicef-irc.org/publications/925-how-does-the-time-children-spend-using-digital-technology-impact-their-mental-well.html

Kim, E. J., Namkoong, K., Ku, T., & Kim, S. J. (2008). The relationship between online game addiction and aggression, self-control and narcissistic personality traits. *European Psychiatry, 23*(3), 212–218. doi:10.1016/j.eurpsy.2007.10.010

King, D. L., & Delfabbro, P. H. (2014). The cognitive psychology of Internet gaming disorder. *Clinical Psychology Review, 34*(4), 298–308. doi:10.1016/j.cpr.2014.03.006

King, D. L., Delfabbro, P. H., Doh, Y. Y., Wu, A. M. S., Kuss, D. J., Pallesen, S., Mentzoni, R., Carragher, N., & Sakuma, H. (2017). Policy and prevention approaches for disordered and hazardous gaming and Internet use: An international perspective. *Prevention Science, 19*(2), 233–249. doi:10.1007/s11121-017-0813-1

Király, O., Griffiths, M. D., King, D. L., Lee, H. K., Lee, S. Y., Bányai, F., Zsila, Á., Takacs, Z. K., & Demetrovics, Z. (2018). Policy responses to problematic video game use: A systematic review of current measures and future possibilities. *Journal of Behavioral Addictions*. Advance online publication. 1–15. doi:10.1556/2006.6.2017.050

Ko, C. H., Yen, J. Y., Chen, C. C., Chen, S. H., & Yen, C. F. (2005). Gender differences and related factors affecting online gaming addiction among Taiwanese adolescents. *Journal of Nervous and Mental Disease, 193*(4), 273–277. doi:10.1097/01.nmd.0000158373.85150.57

Koo, H. J., & Kwon, J.-H. (2014). Risk and protective factors of Internet addiction: A meta-analysis of empirical studies in Korea. *Yonsei Medical Journal, 55*(6), 1691–1711. doi:10.3349/ymj.2014.55.6.1691

Kovess-Masfety, V., Keyes, K., Hamilton, A., Hanson, G., Bitfoi, A., Golitz, D., Koç, C., Kuijpers, R., Lesinskiene, S., Mihova, Z., Otten, R., Fermania, C., & Pez, O. (2016). Is time spent playing video games associated with mental health, cognitive and social skills in young children? *Social Psychiatry and Psychiatric Epidemiology, 51*(3), 349–357. doi:10.1007/s00127-016-1179-6

Mak, K. K., Lai, C. M., Watanabe, H., Kim, D. I., Bahar, N., Ramos, M., Young, K. S., Ho, R. C., Aum, N. R., & Cheng, C. (2014). Epidemiology of Internet behaviors and addiction among adolescents in six Asian countries. *Cyberpsychology, Behavior, and Social Networking, 17*(11), 720–728. doi:10.1089/cyber.2014.0139

Mewton, L., Visontay, R., Chapman, C., Newton, N., Slade, T., Kay-Lambkin, F., & Teesson, M. (2018). Universal prevention of alcohol and drug use: An overview of review in an Australian context. *Drug and Alcohol Review, 37*(1), S435–S469. doi:10.1111/dar.12694

Mihara, S., Osaki, Y., Nakayama, H., Sakuma, H., Ikeda, M., Itani, O., Kaneita, Y., Kanda, H., Ohida, T., & Higuchi, S. (2016). Internet use and problematic Internet use among adolescents in Japan: A nationwide representative survey. *Addictive Behaviors Reports, 4,* 58–64. doi:10.1016/j.abrep.2016.10.001

Ofcom. (2017). *Children and parents: Media use and attitudes report*. Retrieved June 27, 2018, from https://www.ofcom.org.uk/research-and-data/media-literacy-research/childrens/children-parents-2017

Office of the Communications Authority, The Government of the Hong Kong Special Administrative Region. (2018). *Telecommunications*. Retrieved August 6, 2018, from https://www.ofca.gov.hk/filemanager/ofca/en/content_113/telecommunications.pdf

Rehbein, F., Kleimann, M., & Mössle, T. (2010). Prevalence and risk factors of video game dependency in adolescence: Results of a German nationwide survey. *Cyberpsychology, Behavior, and Social Networking, 13*(3), 269–277. doi:10.1089/cyber.2009.0227

Rideout, V. (2017). *The common sense census: Media use by kids age zero to eight*. San Francisco, CA: Common Sense. Retrieved June 27, 2018, from http://cdn.cnn.com/cnn/2017/images/11/07/csm_zerotoeight_full.report.final.2017.pdf

Saunders, J. B., Hao, W., Long, J., King, D. L., Mann, K., Fauth-Bühler, M., Rumpf, H. J., Bowden-Jones, H., Rahimi-Movaghar, A., Chung, T., Chan, E., Bahar, N., Achab, S., Lee, H. K., Potenza, M., Petry, N., Spritzer, D., Ambekar, A., Derevensky, J., Griffiths, M. D., Pontes, H. M., Kuss, D., Higuchi, S., Mihara, S., Assangangkornchai, S., Sharma, M., Kashef, A. E., Ip, P., Farrell, M., Scafato, E., Carragher, N., & Poznyak, V. (2017). Gaming disorder: Its delineation as an important condition for diagnosis, management, and prevention. *Journal of Behavioral Addictions, 6*(3), 271–279. doi:10.1556/2006.6.2017.039

Scutti, S. (2018). *WHO classifies 'gaming disorder' as mental health condition*. CNN. Retrieved June 27, 2018, from https://edition.cnn.com/2018/06/18/health/video-game-disorder-who/index.html

Shek, T. L. D., Sun, C. F. R., & Merrick, J. (2012). Positive youth development constructs: Conceptual review and application. *The Scientific World Journal, 2012,* Article ID 152923. doi:10.1100/2012/152923

Torres-Rodríguez, A., Griffiths, M. D., Carbonell, X., Farriols-Hernando, N., & Torres-Jimenez, E. (2017). Internet gaming disorder treatment: A case study evaluation of four different types of adolescent problematic gamers. *International Journal of Mental Health and Addiction*. Advance online publication. 1–12. doi:10.1007/s11469-017-9845-9

Turel, O., Romashkin, A., & Morrison, K. M. (2016). Health outcomes of information system use lifestyles among adolescents: Videogame addiction, sleep curtailment and cardio-metabolic deficiencies. *PLoS One, 11*(5), e0154764. doi:10.1371/journal.pone.0154764

US Department of Health and Human Services. (2016). *Facing addiction in America: The surgeon general's report on alcohol, drugs, and health*. Retrieved June 27, 2018, from https://addiction.surgeongeneral.gov/

Vondráčková, P., & Gabrhelík, R. (2016). Prevention of Internet addiction: A systematic review. *Journal of Behavioral Addictions, 5*(4), 568–579. doi:10.1556/2006.5.2016.085

World Health Organization [WHO]. (2018). *WHO releases new International Classification of Diseases (ICD 11)*. Retrieved June 27, 2018, from http://www.who.int/news-room/detail/18-06-2018-who-releases-new-international-classification-of-diseases-(icd-11)

Young, K. (2009). Understanding online gaming addiction and treatment issues for adolescents. *American Journal of Family Therapy, 37*(5), 355–372. doi:10.1080/01926180902942191