



AKADÉMIAI KIADÓ

Gaming disorder and the COVID-19 pandemic: Treatment demand and service delivery challenges








Journal of Behavioral
Addictions

11 (2022) 2, 243–248

DOI:

10.1556/2006.2022.00011

© 2022 The Author(s)

DANIEL L. KING^{1*} , SOPHIA ACHAB^{2,3} ,
SUSUMU HIGUCHI⁴ , HENRIETTA BOWDEN-JONES^{5,6,7},
KAI W. MÜLLER⁸ , JOËL BILLIEUX^{9,10} ,
VLADAN STARCEVIC¹¹ , JOHN B. SAUNDERS¹² ,
PHILIP TAM¹³ and PAUL H. DELFABBRO¹⁴

¹ College of Education, Psychology and Social Work, Flinders University, Australia

² Outpatient Centre for Behavioral Addictions ReConnecte, Addiction Division, Department of Psychiatry, University Hospitals of Geneva, Switzerland

³ Clinical and Sociological Research Unit, Department of Psychiatry, Faculty of Medicine, University of Geneva, Switzerland

⁴ National Hospital Organization Kurihama Medical and Addiction Center, Yokosuka, Japan

⁵ National Centre for Gaming Disorders, United Kingdom

⁶ Faculty of Brain Sciences, University College London, United Kingdom

⁷ Department of Psychiatry, Cambridge University, United Kingdom

⁸ Outpatient Clinic for Behavioral Addictions, Department of Psychosomatic Medicine and Psychotherapy at the University Medical Center, Mainz, Germany

⁹ Institute of Psychology, University of Lausanne, Lausanne, Switzerland

¹⁰ Centre for Excessive Gambling, Addiction Medicine, Lausanne University Hospitals (CHUV), Lausanne, Switzerland

¹¹ University of Sydney, Faculty of Medicine and Health, Sydney Medical School, Nepean Clinical School, Sydney, Australia

¹² National Centre for Youth Substance Use Research, The University of Queensland, Brisbane, Australia

¹³ The Psych Matters Clinic, Concord, Sydney, Australia

¹⁴ School of Psychology, The University of Adelaide, Australia

Received: December 14, 2021 • Revised manuscript received: February 18, 2022 • Accepted: March 13, 2022

Published online: April 12, 2022

COMMENTARY



ABSTRACT

Gaming activities have conferred numerous benefits during the COVID-19 pandemic. However, some individuals may be at greater risk of problem gaming due to disruption to adaptive routines, increased anxiety and/or depression, and social isolation. This paper presents a summary of 2019–2021 service data from specialist addiction centers in Germany, Switzerland, Japan, and the United Kingdom. Treatment demand for gaming disorder has exceeded service capacity during the pandemic, with significant service access issues. These data highlight the need for adaptability of gaming disorder services and greater resources and funding to respond effectively in future public health crises.

KEYWORDS

addiction, behavioral addiction, problematic gaming, gaming disorder, treatment, service delivery

The COVID-19 pandemic has been a time of prosperity for the global video gaming industry, as millions of people turned to gaming for reasons including social connection, mental

*Corresponding author.

E-mail: daniel.king@flinders.edu.au

stimulation, and coping with stress (King et al., 2020; Macted, 2020). Studies report that, during the pandemic, time spent gaming increased (Vuorre, Zendle, Petrovskaya, Ballou, & Przybylski, 2021), without being associated with negative consequences in most cases (Barr & Copeland-Stewart, 2021; Zarco-Alpuente et al., 2021). Moreover, involvement in gaming activities conferred mental health and social compensatory benefits (Barr & Copeland-Stewart, 2021; Giardina et al., 2021).

However, as recognized by the ICD-11's classifications of 'Hazardous gaming' and 'Gaming disorder' (GD), excessive gaming can have negative psychological and physical consequences (Billieux, Stein, Castro-Calvo, Higuchi, & King, 2021; King, Wölfling, & Potenza, 2020; Király et al., 2020; Saunders et al., 2017). Negative consequences of excessive gaming include neglect of adaptive routines and interference with normal functioning, including: basic activities (i.e., sleep, eating, personal hygiene); social interaction (i.e., meeting friends face-to-face, visiting significant others); and important responsibilities (i.e., school, work, care of dependents), as well as poorer psychological wellbeing, including irritability, anxiety, and depressed mood (Carey, Delfabbro, & King, 2021; González-Bueso et al., 2020; Higuchi et al., 2021; King & Delfabbro, 2018; Ko et al., 2020; Müller et al., 2019; Starcevic et al., 2020).

Emerging research on problematic gaming in the context of COVID-19 has reported the following observations: (1) gaming time among problem gamers increased by 25% during the pandemic, with mean total screen time increasing from 229 to 293 min/day (Paschke, Austermann, Simon-Kutscher, & Thomasius, 2021); (2) adolescent problematic gamers reported a threefold increase in gaming time, as compared to a less-than-twofold increase among non-problem gamers (Kim & Lee, 2021); (3) GD symptoms increased marginally among adolescents surveyed in Oct-Nov 2019 and March-April 2020 (Teng, Pontes, Nie, Griffiths, & Guo, 2021); and (4) video game loot box spending was significantly associated with problem gambling symptomatology among gamers in lockdown (Hall et al., 2021). Broadly, these data suggest that lifestyle changes arising in pandemic conditions, including the introduction of public health measures such as stay-at-home mandates, may be associated with greater risk of excessive gaming for vulnerable users.

An important question that arises in this context is whether individuals and/or families experiencing problem gaming issues seek professional assistance from mental health services during the pandemic to address these issues and whether the pandemic affected the accessibility of services. Despite an emerging literature on the best clinical interventions for GD (King et al., 2017; Stevens, King, Dorstyn, & Delfabbro, 2019; Wölfling et al., 2019; Zajac et al., 2017), less is known about the burden on mental health systems or the treatment demand for problem gaming (inclusive of GD) (Humphreys, 2019). Greater contact with services might be anticipated, for example, among families experiencing difficulties during the pandemic due to children and adolescents being subject to stay-at-home orders,

the move to schooling being done remotely and online, and challenges associated with re-establishing normal routines (e.g., in-person school attendance, normalization of sleep patterns) post-lockdown (Donati et al., 2021; King, Delfabbro, Billieux, & Potenza, 2020).

To address this gap in knowledge, and to advance the wider discussion of the clinical relevance and health burden of severe problem gaming issues, this paper provides a summary of relevant service data (e.g., referrals and help-seeking) from addiction centers that specialize in problem gaming and GD in Germany, Switzerland, Japan, and the United Kingdom. This information is provided by the incumbent Directors and/or Clinical Leads of each treatment center.

MEASURES IN RELATION TO THE COVID-19 PANDEMIC BY REGION

Government responses to the coronavirus pandemic have varied greatly according to region, with differing priorities related to health and economic objectives and other factors affecting decisions including monitoring capabilities, border control, and the variants and spread of the disease.

Germany reported its first case of COVID-19 in January 2020, which led to the introduction of restrictions in March 2020, including mandated school closures and the closure of borders to neighboring countries. From May, there was an easing of restrictions followed by a partial lockdown and then a full lockdown during the second wave beginning in October 2020.

During the first wave of the COVID-19 pandemic in Switzerland, a partial lockdown (e.g., restrictions on large gatherings, closing of schools, and cancellation of events) was first implemented in February 2020 and lasted until April 2020. Restrictions were further eased from June 2020 but then later reintroduced in October 2020 due to rising cases.

In the UK, the pandemic response included a national lockdown in March 2020, which was followed by varied responses across its 4 nations, including lockdowns, self-isolation requirements, and rules on masks and social distancing. Similar to other European nations, lockdowns were introduced in October during the second wave.

In Japan, state-of-emergency measures or quasi-state of emergency measures, comprising less stringent restrictions than other countries, were implemented during each wave of the pandemic. These measures included encouraging staying and working at home, early closing time in restaurants, restrictions on alcohol consumption in restaurants and bars, and a ban on large gatherings of people.

PREVALENCE OF GAMING DISORDER AND HELP-SEEKING RATES

Recent meta-analyses of gaming disorder have reported pooled rates of about 2–3% (Kim et al., 2022; Stevens,



Dorstyn, Delfabbro, & King, 2021). However, estimates are highly heterogeneous and affected by study methodology and participant characteristics, among other factors.

In Germany, several nationally representative studies of GD and other internet-related disorders have been conducted. These studies have reported GD rates of between 1 and 3.5% among adolescents (Rehbein, Kliem, Baier, Möhle, & Petry, 2015; Wartberg, Kriston, & Thomasius, 2020) and 1.0% for ‘internet addiction’ in the general population (aged 14- to 64-years) (Rumpf et al., 2014). Help-seeking rates in the region are not known.

In Switzerland, there is currently no available epidemiological data on gaming disorder in the general population. However, a 2015 study of ‘internet addiction’ (i.e., encompassing many different online activities, including gaming) reported that its prevalence in the general population aged over 15 years was 3.8%, with the most affected age group (15–24 years) reporting a prevalence rate of 11.2% (Marmet, Notari, & Gmel, 2015). No national data on GD help-seeking rates is available.

In the UK, there have been relatively few prevalence studies that assess problematic gaming. In a meta-analysis of 61 studies (Kim et al., 2022), one of the most recent nationally representative studies, with more than 2,500 participants recruited from the UK, reported a GD prevalence rate of 0.5% which was among the lowest rates among the reviewed studies (Przybylski et al., 2017). National help-seeking rates for GD in the UK are not known.

In Japan, the prevalence of probable GD among the general young population (those aged between 10 and 29 years old) was estimated in 2019 to be 7.6% for males, 2.5% for females and 5.1% overall (Higuchi et al., 2021). A similar nationwide survey of the general population, aged between 10 and 79 years old, was conducted in late 2019. The results have yet to be published.

TREATMENT

Germany

In Germany, the Outpatient Clinic for Behavioral Addiction located in Mainz has been in operation since 2008. The Clinic was the first outpatient clinic in the country to offer cognitive-behavioral therapy (CBT) for GD and other internet use disorders, in addition to gambling disorder. In 2019, the Clinic accepted 75 referrals, compared to 81 in 2020 and 79 in 2021. In each year, most (65%) referrals were for GD. The Clinic receives hundreds of service requests each year. Thus, the demand for GD treatment has been stable and exceeded the Clinic’s capacity each year. Notably, too, during 2020, the Clinic was not able to accept new referrals for 3 months due to pandemic restrictions, which further increased service demand. The waiting time for accepted referrals was about 3 weeks in 2019 as compared to 3 months waiting time since the beginning of 2021. Data from the Mainz Clinic indicate that GD patients were more negatively affected, as indicated by more severe symptom presentation, during the pandemic years compared to 2019.

Switzerland

In Geneva, Switzerland, the ReConnecte Treatment Center for Online Addictive Behaviors, the first Swiss specialized facility to be established, offers specialized assessment and personalized psychotherapy for young people, adults, and their families (Pozniak, 2021). The Center has been active since 2007 and has treated more than 800 patients aged 13 years and older for internet use-related conditions, with demand for services increasing steadily over time.

In 2019, the Center accepted 164 referrals, compared to 150 in 2020 and 152 in 2021, with a yearly average of 70 patients suffering from GD and 40 relatives seeking treatment and help at the Center. The ReConnecte Center remained open during lockdown and other restrictions in 2020, offering in-person and remote (phone calls and video conference calls) support and psychotherapy. During the first wave of the pandemic, the Center experienced a 15% increase on 2019 figures in terms of the frequency of treatment sessions among its existing cohort of GD patients. Some patients requested 2 to 3 times more frequent online sessions, citing their difficulty with controlling urges due to unlimited access to online technologies while confined at home and experiencing anxiety about the pandemic. Comparison of 2019 and 2020 data showed that the number of patients treated for GD decreased by 8.5% and new demands for GD dropped by 17.4%. These decreases may have been due to change in motivational stage (i.e., reduced readiness to change) as a result of social restrictions, lack of other opportunities, and remote working and stay-at-home lifestyle. In 2021, new demands for GD increased by 19% in comparison with 2020. This increase may have been due to the easing of social restrictions in the country following vaccination in the population.

Among GD referrals, common presenting issues included family conflict, social isolation, and gaming-related interference with other activities. Three consumer groups (of similar proportion) included: (1) family members (parents or partner) who initiated a referral to ReConnecte; (2) patients (adolescents and adults) referred by school or a healthcare professional, and; (3) self-referred young adult and older patients. In 2020, the primary treatment challenges reported by parents of clients included: (1) parent reporting difficulties in executing the treatment plan, for example, setting limits for their children’s gaming, and; (2) parent permitting the adolescent’s gaming because it enabled the parent to focus on their own work-from-home arrangements and reduce or avoid conflict.

United Kingdom

In the United Kingdom, the National Center for Gaming Disorders (NCGD) based in London is the first specialist GD treatment service within the National Health Service. The Center opened in October 2019 and accepts referrals for people aged 13 and over whose gaming has become problematic, as well as their parents and family members. Treatment can be conducted remotely as well as face-to-face.



The team is made up of psychologists, psychiatrists and family therapists. The Center's treatment program consists mainly of group or individual CBT sessions focused on reducing gaming and increasing alternative activities. The majority of gamers are offered an initial assessment with a psychiatrist and, where appropriate, liaison and consultation are provided to other professionals involved in their care. The Center also works with parents and family members, providing psychoeducational groups and workshops as well as systemic family therapy.

As of December 2021, the NCGD has received 328 referrals, including 171 for gamers and 157 for parents or partners. Treatment demand, in terms of new referrals, has increased steadily over time. In October–December 2019, the Center received 20 referrals (12 gamers, 8 parents), compared with 109 referrals (68 gamers, 41 family members) in 2020 and 201 referrals (92 gamers, 109 family) in 2021. The majority of referrals have been for persons under 20 years of age (mean age of 18.1 years, range: 12–64). In terms of COVID-19 challenges, the NCGD was forced to transition to online delivery due to lockdowns and restrictions in the United Kingdom. Client attendance rates greatly improved when the service transitioned to online service delivery. Clients reported that online appointments were more convenient due to requiring less time off work and not having to take children to London. At the same time, the three lockdowns in England caused significant increases in gaming amongst the patients at the clinic due to schools and universities being closed and a lack of structure (e.g., absence of sports or other extra-curricular activities) reportedly having a limiting effect on everyday life.

Japan

The Kurihama Medical and Addiction Center in Kanagawa Prefecture, Japan, initiated the country's first treatment program for internet use disorders in 2011. Programs include: individual counseling, group CBT, day treatment programs, a treatment camp, inpatient treatment, and family therapies. Similar programs are now offered across more than 80 other treatment facilities in Japan (Humphreys, 2019). In 2019, the Center received 1,185 phone calls requesting appointments as new patients, with a total intake capacity of around 200 new patients each year. About 90% of referrals received a diagnosis of GD according to ICD-11 criteria or a designation of hazardous gaming, with the remainder of referrals reporting problems primarily with other internet applications. Most patients are male, including 81.8% in 2019, 87.9% in 2020 and 88.3% in 2021.

In the context of the COVID-19 pandemic, the number of calls for appointments greatly reduced to 308 in 2020 and 343 in 2021. These decreases were most likely due to the government's public health recommendations to stay at home and not cross prefecture borders, which restricted access to the Center for its large proportion of patients residing in other areas of Japan. Despite these restrictions, the Center recorded intake figures of 218 and 223 new patients in 2020 and 2021, respectively, indicating that demand

still exceeded service capacity. Maximum capacity of patient visit numbers to the Center was maintained between 2019 and 2021, with around 2,200 visits each year from existing and follow-up patients. Follow-up outpatients showed increased internet and smartphone use and gaming behavior following the onset of the COVID-19 pandemic compared to the pre-pandemic period (Higuchi et al., 2020). One of the most important treatment options for improving GD is to effectively increase real world activities in parallel with decreasing gaming activities. However, pandemic-related restrictions on real world activities have made treatment extremely difficult.

CONCLUSIONS

In summary, data provided by the four specialized centers suggest several important trends during the current pandemic and allow a number of preliminary conclusions. First, the levels of distress and impairment associated with GD in the context of the pandemic (i.e., the overall health burden) appear to have increased compared to pre-pandemic levels. Second, there has been a consistent client demand, with some evidence that it has increased during the pandemic. Third, access to specialized services has been adversely affected, as the pandemic made it more difficult for some individuals to obtain initial appointments or maintain service engagement. Fourth, provision of online treatments or telehealth models during the pandemic, in addition to or instead of face-to-face treatment, has enabled services to reach vulnerable users.

There will be continuing public health challenges associated with new variants of the COVID-19 virus and accompanying mental health issues (Avena et al., 2021). Our observations attest to an ongoing need for specialized services for problem gamers and their support systems. This need has intensified during the pandemic and societal responses to the pandemic in the form of various restrictions such as lockdowns and the move to online work and schooling. Specialized GD centers will be able to respond effectively to similar crises in the future and meet the anticipated needs by ensuring an improved access to the services that they provide. In addition to providing online assessment and treatment, additional funding and research should support efforts to develop the evidence base on GD interventions and help ascertain how to effectively and equitably expand the range of resources available to everyone affected by GD.

Funding sources: This work received financial support from a Discovery Early Career Researcher Award (DECRA) DE170101198 funded by the Australian Research Council (ARC).

Authors' contribution: DLK wrote the first draft of the paper with contributions from all co-authors, including service

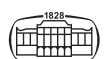


data from SA, SH, HBJ, and KWM. All authors provided edits and have approved the final submitted version of the manuscript.

Conflict of interest: DLK, SA, SH, HBJ, JB, and JS are members of a World Health Organization Advisory Group on Gaming Disorder. PT is a member of the American Psychiatric Association's DSM-5 International Working Group investigating Internet Gaming Disorder. The authors have no other conflicts of interest to declare. The authors alone are responsible for the views expressed in this paper and they do not necessarily represent the official position, policies, views or decisions of any other organization. All authors declare they have received no funding for research and other activities from the gaming industry.

REFERENCES

- Avena, N. M., Simkus, J., Lewandowski, A., Gold, M. S., & Potenza, M. N. (2021). Substance use disorders and behavioral addictions during the COVID-19 pandemic and COVID-19-related restrictions. *Frontiers in Psychiatry*, 12, 433. <https://doi.org/10.3389/fpsy.2021.653674>.
- Barr, M., & Copeland-Stewart, A. (2021). Playing video games during the COVID-19 pandemic and effects on players' well-being. *Games and Culture*. <https://doi.org/10.1177/15554120211017036>.
- Billieux, J., Stein, D. J., Castro-Calvo, J., Higuchi, S., & King, D. L. (2021). Rationale for and usefulness of the inclusion of gaming disorder in the ICD-11. *World Psychiatry*, 20, 198–199. <https://doi.org/10.1002/wps.20848>.
- Carey, P., Delfabbro, P. H., & King, D. L. (2021). An evaluation of gaming-related harms in relation to gaming disorder and loot box involvement. *International Journal of Mental Health and Addiction*. <https://doi.org/10.1007/s11469-021-00556-5>.
- Delfabbro, P., King, D. L., & Carey, P. (2021). Harm severity in internet gaming disorder and problem gambling: A comparative study. *Computers in Human Behavior*, 124, 106898. <https://doi.org/10.1016/j.chb.2021.106898>
- Donati, M. A., Guido, C. A., De Meo, G., Spalice, A., Sanson, F., Beccari, C., & Primi, C. (2021). Gaming among children and adolescents during the COVID-19 lockdown: The role of parents in time spent on video games and gaming disorder symptoms. *International Journal of Environmental Research and Public Health*, 18(12), 6642. <https://doi.org/10.3390/ijerph18126642>.
- Giardina, A., Di Blasi, M., Schimmenti, A., King, D. L., Starcevic, V., & Billieux, J. (2021). Online gaming and prolonged self-isolation: Evidence from Italian gamers before and during the COVID-19 outbreak. *Clinical Neuropsychiatry*, 18, 65–74. <https://doi.org/10.36131/cnfliorteditore20210106>.
- González-Bueso, V., Santamaría, J. J., Oliveras, I., Fernández, D., Montero, E., Baño, M., ... Ribas, J. (2020). Internet gaming disorder clustering based on personality traits in adolescents, and its relation with comorbid psychological symptoms. *International Journal of Environmental Research and Public Health*, 17(5), 1516. <https://doi.org/10.3390/ijerph17051516>.
- Hall, L. C., Drummond, A., Sauer, J. D., & Ferguson, C. J. (2021). Effects of self-isolation and quarantine on loot box spending and excessive gaming—results of a natural experiment. *PeerJ*, 9, e10705. <https://doi.org/10.7717/peerj.10705>.
- Higuchi, S., Mihara, S., Kitayuguchi, S., Miyakoshi, H., Ohi, M., Maezono, M., ... Matsuzaki, T. (2020). Prolonged use of internet and gaming among treatment seekers arising out of social restrictions related to COVID-19 pandemic. *Psychiatry and Clinical Neurosciences*, 74, 607–608. <https://doi.org/10.1111/pcn.13127>.
- Higuchi, S., Nakayama, H., Matsuzaki, T., Mihara, S., & Kitayuguchi, T. (2021). Application of the eleventh revision of the International Classification of Diseases gaming disorder criteria to treatment-seeking patients: Comparison with the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders Internet gaming disorder criteria. *Journal of Behavioral Addictions*, 10(1), 149–158. <https://doi.org/10.1556/2006.2020.00099>.
- Higuchi, S., Osaki, Y., Kinjo, A., Mihara, S., Maezono, M., Kitayuguchi, T., ... Saunders, J. B. (2021). Development and validation of a nine-item short screening test for ICD-11 gaming disorder (GAMES test) and estimation of the prevalence in the general young population. *Journal of Behavioral Addictions*, 10, 263–280. <https://doi.org/10.1556/2006.2021.00041>.
- Humphreys, G. (2019). Sharpening the focus on gaming disorder. *Bulletin of the World Health Organization*, 97(6), 382–383. <https://doi.org/10.2471/BLR.19.020619>.
- Kim, D., & Lee, J. (2021). Addictive internet gaming usage among Korean adolescents before and after the outbreak of the COVID-19 pandemic: A comparison of the latent profiles in 2018 and 2020. *International Journal of Environmental Research and Public Health*, 18(14), 7275. <https://doi.org/10.3390/ijerph18147275>.
- Kim, H. S., Son, G., Roh, E. B., Ahn, W. Y., Kim, J., Shin, S. H., ... Choi, K. H. (2022). Prevalence of gaming disorder: A meta-analysis. *Addictive Behaviors*, 126, 107183. <https://doi.org/10.1016/j.addbeh.2021.107183>.
- King, D. L., & Delfabbro, P. H. (2018). The concept of 'harm' in Internet gaming disorder. *Journal of Behavioral Addictions*, 7, 562–564. <https://doi.org/10.1556/2006.7.2018.24>.
- King, D. L., Delfabbro, P. H., Billieux, J., & Potenza, M. N. (2020). Problematic online gaming and the COVID-19 pandemic. *Journal of Behavioral Addictions*, 9, 184–186. <https://doi.org/10.1556/2006.2020.00016>.
- King, D. L., Delfabbro, P. H., Wu, A. M. S., Doh, Y. Y., Kuss, D. J., Mentzoni, R., ... Sakuma, H. (2017). Treatment of Internet gaming disorder: An international systematic review and CONSORT evaluation. *Clinical Psychology Review*, 54, 123–133. <https://doi.org/10.1016/j.cpr.2017.04.002>.
- King, D. L., Wölfling, K., & Potenza, M. N. (2020). Taking gaming disorder treatment to the next level. *JAMA Psychiatry*, 77, 869–870. <https://doi.org/10.1001/jamapsychiatry.2020.1270>.
- Király, O., Potenza, M. N., Stein, D. J., King, D. L., Hodgins, D. C., Saunders, J. B., ... Demetrovics, Z. (2020). Preventing problematic internet use during the COVID-19 pandemic: Consensus guidance. *Comprehensive Psychiatry*, 100, 152180. <https://doi.org/10.1016/j.comppsy.2020.152180>.



- Ko, C. H., Lin, H. C., Lin, P. C., & Yen, J. Y. (2020). Validity, functional impairment and complications related to Internet gaming disorder in the DSM-5 and gaming disorder in the ICD-11. *Australian & New Zealand Journal of Psychiatry*, 54(7), 707–718. <https://doi.org/10.1177/0004867419881499>.
- Marmet, S., Notari, L., & Gmel, G. (2015). Suchtmonitoring Schweiz. Themenheft Internetnutzung und problematische Internetnutzung in der Schweiz im Jahr 2015, Sucht Schweiz Lausanne. https://www.suchtmonitoring.ch/docs/library/marmet_mz1vxtjaun6v.pdf.
- Maxted, A. (July 2020). *Saving the lost boys of lockdown*. The Telegraph. Retrieved online <https://www.telegraph.co.uk/family/life/saving-lost-boys-lockdown/> [Accessed 15 Jul 2020].
- Müller, K. W., Beutel, M. E., & Wölfling, K. (2019). Decreased occupational functioning and increased physical health complaints in treatment seekers with internet-related disorders: Compared to patients with gambling disorder. *European Addiction Research*, 25, 229–237. <https://doi.org/10.1159/000500543>.
- Paschke, K., Austermann, M. I., Simon-Kutscher, K., & Thomasius, R. (2021). Adolescent gaming and social media usage before and during the COVID-19 pandemic. *Sucht*, 67, 13–22. <https://doi.org/10.1177/14550725221074997>.
- Pozniak, H. (2021). A very modern addiction. *Tech for good*, 13, 42–51. Retrieved online <https://static1.squarespace.com/static/5d5673d61bd11b0001b38a48/t/614083169ffe6473fe0ae833/1631617818418/Tech+for+Good+-+HP1.pdf> [Accessed 01 Dec 2021].
- Przybylski, A. K., Weinstein, N., & Murayama, K. (2017). Internet gaming disorder: Investigating the clinical relevance of a new phenomenon. *American Journal of Psychiatry*, 174(3), 230–236. <https://doi.org/10.1176/appi.ajp.2016.16020224>
- Rehbein, F., Kliem, S., Baier, D., Mößle, T., & Petry, N. M. (2015). Prevalence of internet gaming disorder in German adolescents: Diagnostic contribution of the nine DSM-5 criteria in a state-wide representative sample. *Addiction*, 110, 842–851. <https://doi.org/10.1111/add.12849>.
- Rumpf, H.-J., Vermulst, A. A., Bischof, A., Kastirke, N., Gürtler, D., Bischof, G., ... Meyer, C. (2014). Occurrence of internet addiction in a general population sample: A latent class analysis. *European Addiction Research*, 20, 159–166. <https://doi.org/10.1159/000354321>.
- Saunders, J. B., Hao, W., Long, J., King, D. L., & Mann, K., (2017). Gaming disorder: Its delineation as a serious condition for diagnosis, management and prevention. *Journal of Behavioral Addictions*, 6, 271–279. <https://doi.org/10.1556/2006.6.2017.039>.
- Starcevic, V., Choi, T. Y., Kim, T. H., Yoo, S. K., Bae, S., Choi, B. S., & Han, D. H. (2020). Internet gaming disorder and gaming disorder in the context of seeking and not seeking treatment for video-gaming. *Journal of Psychiatric Research*, 129, 31–39. <https://doi.org/10.1016/j.jpsychires.2020.06.007>.
- Stevens, M. W., Dorstyn, D., Delfabbro, P. H., & King, D. L. (2021). Global prevalence of gaming disorder: A systematic review and meta-analysis. *Australian and New Zealand Journal of Psychiatry*, 55(6), 553–568. <https://doi.org/10.1177/0004867420962851>.
- Stevens, M. W., King, D. L., Dorstyn, D., & Delfabbro, P. H. (2019). Cognitive-behavioral therapy for Internet gaming disorder: A systematic review and meta-analysis. *Clinical Psychology and Psychotherapy*, 26(2), 191–203. <https://doi.org/10.1002/cpp.2341>.
- Teng, Z., Pontes, H. M., Nie, Q., Griffiths, M. D., & Guo, C. (2021). Depression and anxiety symptoms associated with internet gaming disorder before and during the COVID-19 pandemic: A longitudinal study. *Journal of Behavioral Addictions*, 10(1), 169–180. <https://doi.org/10.1556/2006.2021.00016>.
- Vuorre, M., Zendle, D., Petrovskaya, E., Ballou, N., & Przybylski, A. K. (2021). A large-scale study of changes to the quantity, quality, and distribution of video game play during a global health pandemic. *Technology, Mind, and Behavior*, 2(4). <https://doi.org/10.1037/tmb0000048>.
- Wartberg, L., Kriston, L., & Thomasius, R. (2020). Internet gaming disorder and problematic social media use in a representative sample of German adolescents: Prevalence estimates, comorbid depressive symptoms and related psychosocial aspects. *Computers in Human Behavior*, 103, 31–36. <https://doi.org/10.1016/j.chb.2019.09.014>.
- Wölfling, K., Müller, K. W., Dreier, M., Ruckes, C., Deuster, O., Batra, A., ... Beutel, M. E. (2019). Efficacy of short-term treatment of internet and computer game addiction: A randomized clinical trial. *JAMA Psychiatry*, 76(10), 1018–1025. <https://doi.org/10.1001/jamapsychiatry.2019.1676>.
- Zajac, K., Ginley, M. K., Chang, R., & Petry, N. M. (2017). Treatments for Internet gaming disorder and Internet addiction: A systematic review. *Psychology of Addictive Behaviors*, 31(8), 979. <https://doi.org/10.1037/adb0000315>.
- Zarco-Alpuente, A., Ciudad-Fernández, V., Ballester-Arnal, R., Billieux, J., Gil-Llario, M. D., King, D. L., ... Castro-Calvo, J. (2021). Problematic internet use prior to and during the COVID-19 pandemic. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 15(4). Article 1. <https://doi.org/10.5817/CP2021-4-1>.

