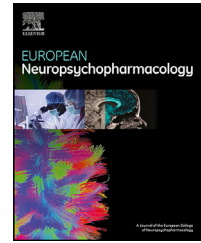




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COVID-19 and Behavioral Addictions: Worrying consequences?

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On March 11th, 2020, the World Health Organization declared COVID-19 a pandemic. The health measures implemented by the governments of all countries were strict, to prevent the virus from spreading out of control. The results of these measures and the situation resulting from the health crisis had an impact not only on the physical health of individuals, but also on their habits, mental health (Constanza et al., 2020; Baenas et al., 2020) and cognitive impairment (Montejo et al., 2021)

Moreover, the impact of stress, isolation, boredom and lack of activity and stimuli on substance use, as well as on other **addictive behaviors**, such as gambling, video games or pornography viewing is widely known (Király et al., 2020). In addition, for many people, these restrictions meant a reduction in their economic income, loss of employment, and significant concern as well as uncertainties for their families' jobs and financial future. This situation raised alarms from governments, especially in relation to gambling activity (Gainsbury et al., 2021).

Within this background, the **use of Information and Communication Technology (ICT)** has increased dramatically, being useful in the maintenance of the economy, communication, work, socialization, reduction of isolation, but also as a strategy to manage negative emotional states (Király et al., 2020). In this sense, studies point out that, indeed, during the pandemic, the use of new technologies has increased significantly. Most especially, the use of smartphones (Serra et al., 2021), video games and related activities, such as viewing e-games and streaming video games (King et al., 2020), as well as problematic internet use has increased. In fact, the initiative of the video game industry at the beginning of the pandemic, known as "PlayApartTogether" was even supported by the WHO, recognizing that video games were a form of socialization and entertainment, especially recommending those that promoted physical and mental health. At the same time, it incorporated health recommendations for the prevention of COVID-19. However, afterwards the WHO launched the message for the need to control the time dedicated to screens and video games, due to its potentiality to become addictive and out of control.

Regarding **gambling activity**, one of the consequences of the COVID-19 worldwide restrictions was the closure of land-based venues (gambling halls, bingos and casinos) and the cancellation of sporting events. Despite this, gambling did not decrease its popularity, and, in fact, the offer of on-

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line gambling increased, which led most countries to establish a series of restrictions and recommendations (UK, Portugal, Spain, among others). Even in others, such as Australia, there was an increase in gambling activity at the beginning of the confinement (Gainsbury et al., 2021). Therefore, with the closure of gambling establishments and the suspension of sporting events, it was initially thought that sports betting players would probably shift their interest to online casino games (Håkansson et al., 2020). However, this hypothesis was not confirmed, and studies conducted with data obtained from large online gambling operators in Europe confirmed that during the pandemic there was a significant decrease in gambling expenditure. Moreover, money did not shift to other types of gambling, such as online casinos, remaining at the same level as in the period prior to the lockdown. The hypotheses that the authors put forward, when justifying these results, were the lower availability of money and the population's preference for doing activities at home and spending time with the family. Other studies also showed that there was a reduction in offline and online gambling in the general population. However, in individuals who already presented problematic or risky gambling behavior prior to the pandemic, their involvement in this activity increased. People who also presented higher levels of stress, symptoms of anxiety and depression, fewer hours at work, alcohol consumption, cannabis use, mental health concerns, intention to chase losses and to get money through gambling represented a subgroup of high vulnerability (Håkansson et al., 2020). Following Gainsbury et al. (2021), this reduction can be interpreted in the context that, in the face of economic difficulties and times of crisis, most of the population decreases its spending on gambling, although people with gambling problems may increase this activity in an attempt to improve their financial situation.

The review by Hodgins & Stevens (2021) confirms a reduction in gambling activity, coinciding with the measures of restriction and closure of land-based gambling venues, promoted by the different governments, and that the increase in gambling behavior was specifically associated with a series of variables such as having previous gambling problems, younger age and being male. Despite the fact that, in relation to gambling, this health crisis has further highlighted the existence of risk groups, the long-term effects are still unknown.

Considering another behavioral addiction such as problematic pornography use, during February and March 2020, Pornhub, one of the largest pornography platforms, identified a significant increase, ranging from 4%-24%, depending on the countries (Mestre-Bach et al., 2020). While it had already shown a progressive rise in recent years, during the first phase of the lockdown the use of this site significantly increased, probably as a way to escape stressful situations, due to health restrictions. At the same time, other similar abnormal behaviors, such as compulsive buying or overeating, have also shown an association with anxiety and feelings of helplessness in the context of the pandemic, but also with difficulties for coping with stress (Baenas et al., 2020).

In conclusion, the several lockdowns and the social and mobility restriction measures, due to the pandemic, have had a significant impact on mental health and addictions, as well as on neurocognitive functioning, especially in vul-

nerable populations. But the most important thing will be to evaluate and implement strategies for the consequences of this crisis in the mid- long term, and whether this situation will lead to an increase in the incidence of certain types of gambling (e.g. online gambling) and a worsening of symptoms.

Declaration of Competing Interest

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