Gaming disorder: Practical tips for general practice

Ignatius Eric Hadinata, Anne Saunders, Erin Stephens

Background
Globally, the gaming industry generates more revenue than the music, film and gambling industries combined. Australia ranks first globally in gaming market penetration. People game for various reasons. Defining harmful gaming, however, can be challenging.

Objective
General practice can often be the first point of contact for patients who engage in harmful gaming. The aim of this article is to provide practical tools for screening, diagnosing and managing gaming disorders in general practice.

Discussion
When a patient presents to general practice with likely harms from gaming, it is useful to assess the patient's problem against a validated screening tool. A comprehensive assessment, assisted by the timeline followback tool, may assist with a comprehensive risk assessment and biopsychosocial formulation, which informs an individualised treatment plan.

THE VIDEO GAMING INDUSTRY is massive, forecast to generate a revenue of US$522 billion in 2025, at an annual growth of 7.01%. This surpasses the combined revenue of the gambling, video streaming, music and film industries.[1]

Australia ranked first globally in market penetration, defined as the percentage of a specific population that engages with video games, either by playing or purchasing games (34.7% in 2024).[1]

There is a shift in demographics over time, with active gamers (defined as people who either purchased or played any video game in that particular research year) being less predominantly male (53% in 2023 vs 62% in 2006). Gaming is also a predominantly adult activity, with 80% of gamers aged over 18 years, with the largest age grouping (38%) being 18–34 years.[1]

With the aim of assisting general practitioners (GPs) when a patient presents with problematic gaming, we present a practical approach to assessing this problem and developing a comprehensive risk assessment, a biopsychosocial formulation and an individualised treatment plan.

Shifting demographics, gaming behaviour and motivation

The COVID-19 pandemic altered gaming behaviour and spending.[2] The gaming industry invested considerable resources in understanding consumer priorities and spending triggers. The gaming industry's responses to the findings include promotions, influencers, leveraging social aspects, customisation, rewards for returning gamers and other strategies.[2]

One particularly lucrative strategy has been the use of 'loot boxes', digital items offering randomised rewards in exchange for payment. Revenue generated from 'loot boxes' was US$15 billion in 2020 and was forecast to increase significantly.[3] Although it shares similarities with gambling,[4,5] it has little regulation in place.[6] There is evidence that the design feature induces overspending.[6]

Academic research identified reasons for gaming as broadly categorised into escape, coping, fantasy, skill development, recreation, competition and social reasons.[7] More recent proprietary market research has identified similar motivations, though framed differently, including: stress relief, self-expression, achievement, social connection, escape, challenge, 'to kill time' and exploration.[8]

Defining harmful gaming

Concerns about potential harms from gaming span multiple domains, including interpersonal harm,[9,10] financial harm,[11] physical health effects[12] and the potential gateway to gambling.[4,5]

The International classification of diseases, 11th revision (ICD-11) outlines formal diagnostic criteria for gaming disorder (GD).[13] In contrast, the *Diagnostic and statistical manual of mental disorders, 5th edition* (DSM-5) proposes diagnostic criteria for internet gaming disorder but has not yet recognised this as a formal diagnosis.[14]

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Although there are a lot of similarities between the two, there are differences in how they approach the diagnosis. The DSM-5 requires a patient to meet five out of nine criteria (preoccupation, withdrawal, tolerance, unsuccessful attempts at control, continued excessive use despite problems, deceiving others, use to escape/relieve mood and significant loss in a social domain because of gaming) over 12 months.[15,16] The ICD-11, on the other hand, requires a patient to meet four essential criteria, with some additional features (Box 1).

Many rating scales exist for GD.[17] The Ten-Item Internet Gaming Disorder Test (IGDT-10) is relatively brief, easy to administer and correlates with both the ICD-11 and DSM-5 diagnostic criteria.[17,18] It has been validated across gender, age, cultures and multiple languages.[18-22]

Prevalence and common comorbidities

A systematic review from 2023 found the global prevalence of GD was 5% but noted a level of uncertainty regarding the true prevalence within the literature, with a range between 0.8% and 17% and a high level of heterogeneity within the studies included in the systematic review.[23] Among those with GD, there were higher levels of comorbid psychiatric disorders[23] and substance use when compared with the general population.[23-26] Although causality has not been established, there are also associations with attention deficit hyperactivity disorder[27] and autism spectrum disorders.[28] Impacts on cognition, impulsivity, social relationships and academic performance are common.[23,29]

Practical approach

When a patient presents with problematic gaming, the severity of the problem can

Box 1. ICD-11 diagnostic criteria for gaming disorder[13]

Essential (Required) Features:

- A persistent pattern of gaming behaviour ('digital gaming' or 'video-gaming'), which may be predominantly online (i.e., over the internet or similar electronic networks) or offline, manifested by all of the following:
  - Impaired control over gaming behaviour (e.g., onset, frequency, intensity, duration, termination, context);
  - Increasing priority given to gaming behaviour to the extent that gaming takes precedence over other life interests and daily activities; and
  - Continuation or escalation of gaming behaviour despite negative consequences (e.g., family conflict due to gaming behaviour, poor scholastic performance, negative impact on health).
- The pattern of gaming behaviour may be continuous or episodic and recurrent but is manifested over an extended period of time (e.g., 12 months).
- The gaming behaviour is not better accounted for by another mental disorder (e.g., Manic Episode) and is not due to the effects of a substance or medication.
- The pattern of gaming behaviour results in significant distress or impairment in personal, family, social, educational, occupational, or other important areas of functioning.

Additional Clinical Features:

- If symptoms and consequences of gaming behaviour are severe (e.g., gaming behaviours persist for days at a time without respite or have major effects on functioning or health) and all other diagnostic requirements are met, it may be appropriate to assign a diagnosis of Gaming Disorder following a period that is briefer than 12 months (e.g., 6 months).
- Individuals with Gaming Disorder may make numerous unsuccessful efforts to control or significantly reduce gaming behaviour, whether self-initiated or imposed by others.
- Individuals with Gaming Disorder may increase the duration or frequency of gaming behaviour over time or experience a need to engage in games of increasing levels of complexity or requiring increasing skills or strategy in an effort to maintain or exceed previous levels of excitement or to avoid boredom.
- Individuals with Gaming Disorder often experience urges or cravings to engage in gaming during other activities.
- Upon cessation or reduction of gaming behaviour, often imposed by others, individuals with Gaming Disorder may experience dysphoria and exhibit adversarial behaviour or verbal or physical aggression.
- Individuals with Gaming Disorder may exhibit substantial disruptions in diet, sleep, exercise and other health-related behaviours that can result in negative physical and mental health outcomes, particularly if there are very extended periods of gaming.
- High-intensity gaming behaviour may occur as a part of online computer games that involve coordination among multiple users to accomplish complex tasks. In these cases, peer group dynamics may contribute to the maintenance of intensive gaming behaviours. Regardless of the social contributions to the behaviour, the diagnosis of Gaming Disorder may still be applied if all diagnostic requirements are met.
- Gaming Disorder commonly co-occurs with Disorders Due to Substance Use, Mood Disorders, Anxiety or Fear-Related Disorders, Attention Deficit Hyperactivity Disorder, Obsessive-Compulsive Disorder, and Sleep-Wake Disorders.

ICD-11, International classification of diseases, 11th revision.

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either be assessed with a screening tool (eg IGDT-10) or mapped against diagnostic criteria (ICD-11 or DSM-5). Exploring the gaming behaviour can be made easier using the timeline followback (TLFB) calendar.[30] This tool was originally validated for substance use disorder, but it can be adapted for use to assess video gaming behaviour.[31] This self-report diary can be used in general practice to track the frequency and duration of weekly gaming as well as time spent on other online activities and screen-free pursuits.

Case study

Ben Smith is a law student aged 22 years who attends the University of Melbourne. He moved from Sydney 5 years ago to study. His parents, worried about his worsening grades and recent failed exams, flew from Sydney to see him. They found Ben in his apartment, surrounded by empty beer cans and food containers.

Ben broke up with his high school girlfriend, Ella, 2 years ago. He was introduced to World of Warcraft (WoW)[32] and found it a good way to cope with loss. Initially, Ben gamed only with his friends and continued to pursue his hobbies (hiking and basketball).

His friends drank beer while gaming, so Ben did the same. Over time, Ben found that he was good at WoW, found respect online and found it was becoming harder to stay away. He started to play alone, finding less time to sleep, attend class or complete his university assignments. With increasing gaming, he consumed more beer. He became irritable towards his university friends, spending less time with them and more time online.

Ben is an only child who had an unremarkable childhood. He excelled in school and was motivated to achieve the grades required to enter Law School. He was too busy studying to game during high school. He kept a small group of friends with whom he played basketball.

Ben expresses concern about how gaming is affecting his life and agrees that doing a TLFB calendar might be useful, focusing on his sleep, university work and alcohol use (Table 1).

Formulation

Ben meets the ICD-11 diagnostic criteria for GD, fulfilling all essential criteria and some additional features in Box 1. He should be assessed for alcohol use disorder. Other concurrent conditions may be present and need consideration. Mood symptoms should be addressed; however, caution is advised against prematurely diagnosing a primary mood disorder in the presence of any addictive disorder.

It is practical to classify risks into actionable immediate, medium- and long-term items. For Ben, this looks like the following:

- Immediate risks – aggression risks (fight in the tutorial), worsening of

Table 1. Timeline followback calendar for case study – Ben Smith

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Date	**2/9/2024**	**3/9/2024**	**4/9/2024**	**5/9/2024**	**6/9/2024**	**7/9/2024**	**8/9/2024**
Activity 1	4.00–7.00 pm: WoW	11.00 am – 2.00 pm: Mindlessly browsing WoW forum	2.00–10.00 pm: WoW	4.00 pm – 2.00 am: WoW	4.00–6.00 pm: Online chat with Dan (he's asking why I'm not out tonight)	2.00–4.00 pm: Play Fortnite with Dan at internet café	2.00–3.00 pm: Basketball with Dan
Activity 2	8.00 pm – 12.00 am: Watching WoW stream on Twitch	3.00 pm – 12.00 am: WoW	10.00 pm – 2.00 am: Watching WoW stream on Twitch		6.00–8.00 pm: Prep for WoW guild mission	5.00–7.00 pm: Prep for WoW guild mission	3.00–5.00 pm: WoW 5.00–6.00 pm: Dan checked in to see if I'm okay!
Activity 3	12.00–4.00 am: WoW				8.00 pm – 6.00 am: WoW guild activities	7.00 pm – 6.00 am: WoW guild activities	6.00 pm – 2.00 am: WoW
Beer	16 cans	24 cans	12 cans	12 cans	20 cans	20 cans	18 cans
Sleep time	4.00–11.00 am	Passed out ~ 12.00–11.00 am	2.00–10.00 am	2.00–10.00 am	6.00 am – 2.00 pm	6.00 am – 2.00 pm	2.00–9.00 am
Notes	Missed 9.00 am lecture, made it to tutorial at noon and 2.00 pm lecture	Missed university all day today, felt very sad	Had a fight at tutorial, got kicked out, missed university rest of the day	Made it to morning lecture! Rest of the day was okay	University uneventful. Zoe asked me out, made excuse not to go	Got to spend some time with Dan!	Left Dan at the basketball court, too anxious to stay
Special day?		Ella's birthday					

Wow, World of Warcraft.

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mood, reputational damage, friendship, relationship and social isolation
- Medium-term risks – psychological risks, failing law degree
- Long-term risks – medical (chronic liver disease, cardiovascular disease, diabetes, pancreatitis/gastritis), psychological risks, financial issues
- Others: suicide, self-harm and harm to others (evaluate on an ongoing basis).

One way to do a biopsychosocial formulation for Ben is to use the 4P formulation.[33] This can be used to form actionable treatment goals.[34] Ben's 4P formulation is shown in Table 2.

Treatment options

There have been several recent systematic reviews for the treatment of GD.[35-37] Some of the pharmacological and non-pharmacological treatment options are summarised in Table 3. Using medication to treat GD is considered 'off-label', and currently there is not enough evidence to recommend medication solely for the treatment of GD.[35] However, medications might have a role in treating other comorbid conditions.

With regard to non-pharmacological treatment, cognitive behaviour therapy (CBT)-based psychotherapy has the strongest evidence base, although other modalities could be useful depending on individual circumstances.[35]

Developing rapport, supporting Ben in gaining insight into the impacts of his gaming

Table 2. Biopsychosocial formulation with the '4P Model' for case study – Ben Smith

Biological	Psychological	Social
• Youth, male gender • (Possibly) malnutrition and other deficiencies • Concurrent heavy alcohol intake and impact on sleep • Evidence of previous good response to escitalopram and psychology	• 'Perfectionist' traits • Limited friendship group growing up • Relationship breakdown • Coping mechanism • Irritability with friends, causing further isolation • Unresolved 'grief' from previous relationship • (At least some) insight into his current issues	• Alcohol and gaming cultures among university students • Life cycle transition from high school to university • Relocation interstate and away from support structure • Social and reward system from gaming • 'Responsibility' towards online community • Worries about his academic troubles • Seems to have a good supportive friend (Dan) • Ongoing parental support

Table 3. Treatment options and evidence base for gaming disorder

Pharmacological treatment options

Medication	Efficacy	Notes	References
Bupropion	Some evidence to reduce cravings and gaming time	Small trials with 6–12 weeks follow-up	35, 41–44
Escitalopram	Some effect in reducing gaming time when combined with CBT	Less effective than bupropion in head-to-head comparisons	44
Atomoxetine	Reduced gaming time in adolescents with ADHD	Effects may be mediated by improvements in ADHD symptoms	45
Methylphenidate	Reduced gaming time in children with ADHD	Effects may be mediated by improvements in ADHD symptoms	45, 46

Non-pharmacological treatment options

Modality	Efficacy	Notes	References
CBT	Most studied; superior to support groups; CBT + bupropion is superior to buproprion alone	Benefits appear to persist at 3 months post treatment	35, 40
Mindfulness-oriented group therapy	Superior to support groups	May be effective in reducing symptoms and improving coping	47, 48
Family therapy	May be helpful in cases with family dynamics	Limited evidence	49
Brief voluntary abstinence	May help in initial engagement and motivation	Limited evidence	50
Self-discovery samps	May support behavioural change through immersive experience	Limited evidence	51

ADHD, attention deficit hyperactivity disorder; CBT, cognitive behaviour therapy.

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Table 4. Negotiated treatment goals and plans for case study – Ben Smith

Short-term goals	Medium-term goals	Long-term goals	Barriers
Attend at least 75% of classes	Pass exams	Complete law degree	Late-night game session
Apply for special consideration for assignment (extend deadline)	Complete assignments		Alcohol intake, sleep issues
Finish basketball game with Dan	Longer outing with Dan	Go on hikes with friends	Emotional impulse control
Address past feelings re: Ella		Re-learn how to be comfortable in new relationships	Embarrassment and reluctance to discuss feelings
Action plans			
Refer to a psychologist – next visit Fill in a special consideration form Discuss sleep hygiene at the next visit	Limit late-night gaming for better sleep Set aside time during the day for study	Consider having a defined schedule for gaming	Plan to review other issues (parents, alcohol, etc) in 3 months Contingency plans: What if things go wrong?

and collaborating to establish treatment goals can be done using brief psychological interventions. An example is 'the magic wand question'.[38] For Ben, say: 'Imagine that I have a magic wand and can make all your problems disappear. What would you want your life to look like in the next 12 months?' His answers include finishing his law degree, playing games without feeling guilty, going back to hiking with his university friends, repairing his relationship with his parents and eventually dating. An example for Ben is shown in Table 4.

A comprehensive treatment plan for Ben, therefore, includes:

- risk management strategies
- negotiated goal-specific treatment
- brief interventions during consultations
- goal setting and checking progress
- sleep hygiene, mindfulness and grounding exercises
- cognitive exercises – early warning signs, recognising and challenging automatic thoughts
- treatment of comorbid conditions
- appropriate alcohol-specific interventions
- treatment of possible concurrent mood disorder or unresolved grief from relationship breakup
- referral for CBT
- treatment progress review
- physical health screening.

Summary

The video game industry is a US$522 billion giant, dwarfing the gambling, video streaming, music and film industries.[1] Understanding the commercial motivations and drivers for growth can help establish public health policies and treatment options to mitigate the harms associated with problematic gaming.[4,39]

There is a gap in knowledge on effective medication options for GD.[35-37] The evidence base for CBT is stronger,[35,40] although it is still relatively weak when compared with other conditions.[35-37]

A thorough clinical assessment of patients presenting with GD can shed light on their gaming behaviour and allow development of a biopsychosocial formulation, risk assessment and negotiated treatment plan for the patient.

Key points

- When a patient presents with problematic gaming, assess the severity of the problem either with a screening tool or by mapping it against diagnostic criteria (ICD-11 or DSM-5).
- Conduct a thorough biopsychosocial assessment, which may include the TLFB calendar, to understand the gaming behaviour, motivations and impact on their life.
- Risk assessment can be used to identify treatment goals.
- CBT has the strongest evidence base for GD; other psychological therapies and medication might be used to address comorbid conditions.
- Collaborate with the patient to set individualised, realistic and achievable treatment goals, focusing on reducing gaming-related harms and improving their overall health and wellbeing.

Authors

Ignatius Eric Hadinata MBBS, BMedSci, FRACGP, FAChAM, Past Chair, Alcohol and Other Drugs Committee, Victoria Faculty, The Royal Australian College of General Practitioners, Melbourne, Vic; Addiction Medicine Specialist and Specialist General Practitioner, Department of Addiction Medicine, The Victoria Clinic, Melbourne, Vic; Addiction Medicine Specialist, Opioid Management Clinic, Orticare Grampians and Loddon Mallee Pharmacotherapy Network Pharmacotherapy Area Based Network, Ballarat, Vic

Anne Saunders BSc, BMBS, FRACGP, Past Chair, Alcohol and Other Drugs Committee, Victoria Faculty, The Royal Australian College of General Practitioners, Melbourne, Vic; Specialist General Practitioner, Port Melbourne Medical, Port Melbourne, Vic; Specialist General Practitioner, Department of Emergency Medicine, Austin Health, Melbourne, Vic

Erin Stephens, Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne, Melbourne, Vic

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Correspondence to:
eric@hadinata.com.au

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correspondence **ajgp@racgp.org.au**

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