Research Report

Prevalence and Assessment of Internet Gaming Disorder in Psychiatric Outpatient Treatment

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Abstract: *Aim:* While Internet Gaming Disorder (IGD) in the general population has a prevalence of 0.6-3.5 %, its frequency and relevance among clinical samples remains unclear. The present investigation aims at assessing the prevalence of IGD in an adult sample in a German psychiatric outpatient clinic and to identify potential predictors that could be helpful for screening for IGD. *Methods:* We performed a naturalistic retrospective study on data collected via a self-report survey including the Ten Item Internet Gaming Disorder Test (IGDT10). Problematic gaming was defined as either reaching the proposed IGDT10 cut-off for IGD or "gamer at risk" or having self-reported problems and negative consequences related to gaming. Age, gender, comorbid diagnoses and response patterns in the IGDT10 were analyzed. *Results:* 299 outpatients participated in the survey, with 54 % confirming engagement in gaming. 2.0 % (n=6) of the participants fulfilled the diagnostic criteria for IGD and almost all of these (n=5) gave a self-report of problems related to gaming. 5.0 % of the participants met our wider definition of problematic gaming (n=15; 13 male; mean age= 25.3 years). *Conclusion:* The prevalence of IGD-affected patients resembled results found in epidemiological studies in the general population. Analyses suggest that for an effective screening assessment, particularly questions regarding subjective impairment related to gaming patterns could be helpful.

Keywords: Gaming Disorder, prevalence, clinical sample, screening assessment

Prävalenz und Beurteilung der Internet Gaming Disorder in der ambulanten psychiatrischen Behandlung

Zusammenfassung: *Zielsetzung:* Verhaltenssüchte im Zusammenhang mit Computer- und Videospielen sind im amerikanischen Diagnostic and Statistical Manual of Mental Disorders (DSM-5, Forschungsdiagnose) und in der 11. Auflage der International Classification of Diseases (ICD-11) operationalisiert. Mit einer Prävalenz von 0.6-3.5 % in der Allgemeinbevölkerung sind Häufigkeit und Relevanz der Internet Gaming Disorder (IGD) in klinischen Populationen nach wie vor unklar. Die vorliegende Untersuchung zielt darauf ab, die Prävalenz der IGD in einer Stichprobe von erwachsenen ambulanten Patienten zu untersuchen und Symptome sowie potentielle Risikofaktoren zu identifizieren, die für das Erkennen der IGD im klinischen Alltag hilfreich sein können. *Methodik:* In der vorliegenden naturalistischen retrospektiven Studie werteten wir selbstberichtete Angaben aus einer Umfrage an Ambulanzpatienten einer deutschen psychiatrischen Universitätsklinik aus, welche zwischen dem 1. April und dem 30. September 2021 als Screening zur Bedarfsermittlung erhoben wurde. Sie umfasste unter anderem den gut validierten und reliablen psychometrischen Fragebogen Ten Item Internet Gaming Disorder Test (IGDT10). Problematisches Spielen wurde in der vorliegenden Arbeit definiert als entweder das Erreichen des vorgeschlagenen IGDT10-Cut-offs für IGD (>4 Punkte) oder 4 Punkte (Gamer at risk) bzw. Angabe subjektiv erlebter Nachteile und Probleme durch das eigene Spielverhalten. Zur Überprüfung von Risikofaktoren wurden Alter, Geschlecht und komorbide Diagnosen sowie zur Ermittlung gefährdender Symptomkomplexe die Antwortmuster im IGDT10 analysiert. *Ergebnisse:* Von der Grundgesamtheit von 1818 Ambulanzpatienten nahmen 299 Patienten (16.4 %) an der Umfrage teil. 54 % der Teilnehmer gaben an, digitale Spiele zu konsumieren (n=160 Spieler), 2.0 % erfüllten die diagnostischen Kriterien der IGD. Fast alle davon (n=5) gaben an, Probleme durch ihr Spielverhalten zu haben. 5.0 % der Teilnehmer erfüllten unsere erweiterte Definition von problematischem Spielen (n=15). Davon waren 13 männlichen Geschlechts, wohingegen die Geschlechtsverteilung aller Teilnehmer fast gleichmäßig war. Das Durchschnittsalter der Betroffenen war mit 25.3 Jahre jünger als dasjenige der Grundgesamtheit (M=33.6). Problematische Spieler markierten die IGDT10-Items „gedankliche Vereinnahmung" und „fortgesetzter Konsum trotz negativer Folgen" besonders oft mit „häufig". Das Item „Flucht vor aversiver Stimmung" wurde in beiden Gruppen am häufigsten genannt und war damit zur Unterscheidung problematischer Spieler von solchen ohne problematischem Verhalten nicht geeignet. *Schlussfolgerung:* Die Prävalenz der IGD-Patienten in unserer Untersuchung ähnelte den Ergebnissen in epidemiologischen Studien an der Allgemeinbevölkerung. Männer jüngeren Alters spielten häufiger und waren eher gefährdet, problematisches Spielverhalten zu zeigen. Die Analysen deuten darauf hin, dass für ein effektives Screening ambulanter Patienten im klinischen Alltag vor allem Fragen zur subjektiven Beeinträchtigung im Zusammenhang mit dem Spielverhalten sowie zum fortgesetzten Spielkonsum trotz negativer Folgen hilfreich sein können.

Schlüsselwörter: Gaming Disorder, Prävalenz, klinische Stichprobe, Screening

Introduction

Physical distancing and stay at home policies during the COVID-19 pandemic were associated with observations of increased media consumption among affected populations. In addition, an increased risk to develop disorders related to media use was hypothesized (Kim & Lee, 2021; King, Delfabbro et al., 2020; Oka et al., 2021; Zhao et al., 2021). Criteria for diagnosing Internet Gaming Disorder (IGD) as a new psychiatric syndrome have been derived from those for Gambling Disorder, Substance Use Disorder, Impulsive Control Disorders, and from the developing field of research on Internet Addiction (Feng et al., 2017).

After the implementation of IGD in Section 3 of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as a research diagnosis, an ongoing debate about considering problematic gaming behavior as a disorder was initiated (Carras et al., 2020; Przybylski et al., 2017; Rumpf et al., 2018; Saunders et al., 2017; van Rooij et al., 2018). DSM-5 names nine criteria, namely preoccupation with games, withdrawal symptoms, tolerance regarding time spent gaming, inability to reduce or quit gaming (loss of control), giving up other activities (loss of interests), continued use of games despite problems, deceiving others about time spent on gaming, relieve negative mood with gaming (escape) and risking or loosing job or relationship due to gaming (jeopardized life). The cut-off for diagnosing IGD was set to 5 or more criteria (APA, 2013). The validity of these items was evaluated with diverse results (Paulus et al., 2018; Rehbein et al., 2015). „Escape“ and „deception“ are critically discussed (Ko et al., 2020; Müller et al., 2019). A recent expert appraisal via an international Delphi study names “loss of control”, “loss of interest”, “continued use” and “jeopardized life” as the criteria with the greatest diagnostic validity (voted by 82.8–93.1% of 29 experts as very or extremely important). The same consortium regards “withdrawal”, “tolerance”, “deception” and “escape” as poorly suited for diagnosing IGD (voted by 6.9–31% as important; Castro-Calvo et al., 2021). Under the label of „Gaming Disorder“ (GD), problematic gaming behavior moved into the 11th version of the International Classification of Diseases (ICD-11), which came into effect on January 1, 2022 (pending in Germany), categorized as an addictive behavior (WHO, 2019). Essential criteria for diagnosing GD are loss of control, continuation despite negative consequences (two most valid features from DSM-5) and increasing priority given to gaming for an extended period of time. ICD-11 emphasizes that a diagnosis should only be given when all criteria are met and in the presence of significant subjective distress or impairment.

Regarding the prevalence of IGD, a recent review and meta-analysis on 53 studies (37 from Europe, 31 with representative sampling) estimates the global prevalence of IGD between 1.96 and 3.05% (Stevens et al., 2021). A review from examinations on healthy adolescents relying on representative samples in 7 European countries reports a prevalence between 0.6 and 2.5% (1.6% in Germany; Müller et al., 2015). In a survey within a representative sample of 1001 German adolescents, the prevalence of IGD was assessed at 3.5% (Wartberg et al., 2020). There are, however, few data regarding clinical samples. In gamers seeking treatment, Darvesh et al. (2020) found a wide range of 3.2–91.0% (because of the variety of diagnostic methods) of actual IGD diagnoses in a review of studies from Korea, China and the USA. In a German multicenter screening study for comorbid behavioral addictions on 801 patients in psychosomatic treatment, Wölfling et al. (2022) found a point prevalence of 3.4% for pathological gambling and 1.9% for pathological internet use. In an adolescent psychiatric multicenter inpatient sample in France, much higher prevalences of 6% to 12.79%, depending on screening methods used, were found (Gauthier et al., 2020). To our knowledge, a screening for comorbid GD/IGD in German psychiatric patient populations seeking for regular outpatient treatment has not been performed so far.

With an explorative naturalistic approach, the first aim of the present investigation was to assess the prevalence of IGD in an adult psychiatric outpatient sample in Germany. Second, we intended to investigate possible predictors for IGD like age, gender and psychiatric comorbidities. Furthermore, to facilitate the identification of gamers in need for treatment in clinical populations, we analyzed, which diagnostic items from ICD-11 and DSM 5 could be particularly helpful to single out problematic gaming in clinical routine.

Methods

Participants and Study Period

The investigation was conducted as a retrospective study with a naturalistic design. Hereby, we accessed data collected with a short self-report questionnaire (see next paragraph) which was systematically offered to all patients seeking outpatient treatment at the psychiatric outpatient clinic of the department of Psychiatry and Psychotherapy at a German University Hospital between April 1 and September 30, 2021. The questionnaire together with an instruction for self-evaluation of the results and an information leaflet regarding problematic gaming behavior was primarily designed to create awareness among participants and to help therapists to identify IGD. Patients who

(i) featured indications for problematic gaming behavior based on their responses and (ii) indicated to consider their own gaming behavior as dysfunctional were contacted and offered specific counseling.

Measures and Procedure

The questionnaire comprised two yes/no-questions and a psychometric test (Ten Item Internet Gaming Disorder Test [IGDT10]). The first question was whether the participants engaged in playing at least one digital game within the last 12 months. "Yes" led to inclusion as gamer, "No" classified as non-gamer. Gamers were asked to complete the IGDT10-questionnaire (see below). As a second question, participants were directly asked to state if they subjectively suffered from problems or underwent actual negative consequences because of their gaming behavior. We included this second question as a supplement to the DSM-5 criteria covered by IGDT10 to consider impairment because of gaming behavior as demanded for diagnosing Gaming Disorder according to ICD-11.

All patients, that completed the questionnaire were included into the retrospective analysis and are referred to as participants (see Figure 1). Only one completed questionnaire (the first one provided) per patient was analyzed. Age, gender and psychiatric diagnoses as assessed by therapists at the time of the survey were collected from the patient's files for each participant.

The IGDT10 (Király, Sleczka et al., 2017) consists of 10 items with a 3-point Likert scale („never", „sometimes", „often"). It was translated into German on the basis of its robust psychometric properties to allow for cross-cultural comparisons (Király et al., 2019). The IGDT10 allows for the assessment of symptoms according to the DSM-5 criteria for IGD within the last 12 months. Gaming behavior that occurred more than 12 months ago was not assessed. The IGDT10 has been reported as a tool with sufficient validity and reliability (Cronbach's alpha .68) to identify Internet Gaming Disorder (King, Billieux et al., 2020). For the analysis, the IGDT10 scores were recoded to resemble the dichotomous structure of the DSM-5 criteria of IGD (preoccupation, withdrawal, tolerance, loss of control, giving up other activities, continuation, deception, escape and jeopardized life) as suggested by the authors. Hereby, the responses "never" and "sometimes" are coded as the criterion was not met (0 point), while the response "often" is coded as the criterion was met (1 point). As items 9 and 10 both refer to the final DSM-5 criterion "jeopardized life", they are combined in the scoring procedure. Responding with "often" to any of the two items or both generates one point. Therefore, the composite score of IGDT-10 ranges from 0 to 9. A score of 5 or more points indicates clinically relevant cases and is categorized as positive for IGD according to DSM-5.

In our intention to broadly screen for possibly problematic gaming behavior, we also included threshold categories. Thus, we defined problematic gamers (see Figure 1) as participants with either self-reported problems and negative consequences related to gaming (based on ICD-11) or an IGDT10-score of 4 (gamers at risk) together with those participants fulfilling IGDT10 criteria for IGD according to the DSM-5 with a score of at least 5. To assess the representativity of the sample that responded to the questionnaire offered, age, sex and diagnosis of all patients that came to the outpatient clinic during the investigation period (whole outpatient sample, n=1818) were retrieved from general treatment statistics.

Statistical Analysis

Parametric procedures such as Pearson's t-test and Chi^2 testing were calculated as appropriate to investigate differences between gamers and non-gamers and between participants in the survey and the whole outpatient sample. For descriptive statistics, frequencies, mean and standard deviation were calculated. The significance level was set to $p=0.05$. For the statistical analysis, Microsoft® Excel® 2019 MSO (Version 2203 Build 16.0.15028.20152) was used.

Results

Of 1818 patients (whole population) that were seen in the outpatient clinic during the 6 months recruiting period, 299 patients (16.4%) participated in the survey. Participants were significantly younger than the whole outpatient population (mean [SD]=33.6 [9.9] vs. 41.6 [2.8] years); $t=8.50$, $p<0.001$) while gender did not differ (51.8% vs. 54.9% female; $X^2=0.95$, $p=0.33$). Of the 299 outpatients that responded to the survey, 160 (54%, gamers) confirmed to have engaged in (online) gaming during the past 12 months at least once. As expected, gamers were significantly younger than non-gamers with a mean age of 29.1 years versus 38.7 years, with a similar age range in both samples (18 to 67 versus 18 to 70 years). Among gamers, 68.5% were male, significantly more than among non-gamers (46.7%). In the study participants, anxiety disorders (40.6%) and severe depression (25.6%) were the most frequent diagnostic categories, similar as in the whole outpatient population of 1818 patients, in which roughly 40% of patients had a diagnosis of severe depression and about 52% a diagnosis of anxiety disorders. Of note, 25% of the whole outpatient population had a diagnosis of schizophrenia (compared to 7.4% of the participants) and only 7.5% a diagnosis of attention deficit/

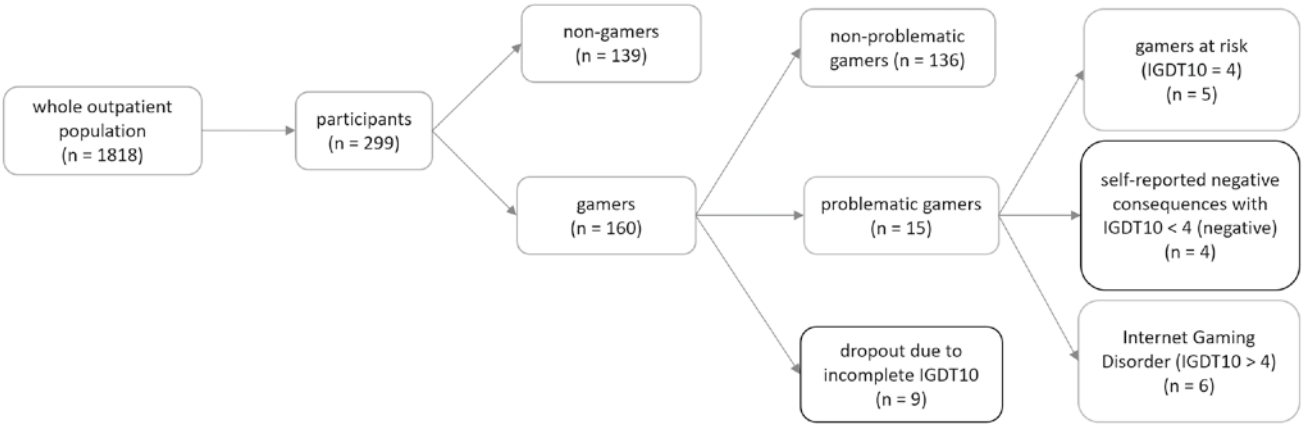

Figure 1. Participants and classification. IGDT10: Ten Item Internet Gaming Disorder Test; gamers at risk with self-reported negative consequences n = 1; Internet Gaming Disorder with self-reported negative consequences n = 5.

hyperactivity disorder ADHD (participants: 14.4 %), suggesting an under- respectively overrepresentation of these diagnoses in the investigated sample. 49.4 % of the gamers and 43.9 % of the non-gamers had more than one psychiatric diagnosis. Frequencies of diagnoses did not differ between both groups.

Of the 160 gamers, 151 filled in the complete IGDT10 (94.4 %). 15 (5.0 % of the participants; 13 male) were categorized as problematic gamers (see Figure 1) as they either stated subjective discomfort or impairment due to gaming (n=10), scored 4 (n=5, gamers at risk) or 5 in the IGDT10 (2.0 % IGD, n=6). 5 out of 6 participants identified as positive for IGD stated subjective impairment due to gaming patterns but only 1 of the 5 gamers at risk according to IGDT10. The mean IGDT10 score (items with „often“) in problematic gamers was 4.13 with a maximum of 7. Of the 136 non-problematic gamers, 34 scored above zero in the IGDT10 with a maximum of 3 positive items in 5 participants. Among the 15 problematic gamers (see Table 1), we found diagnoses of addictive disorders (n=4), mild/moderate depression (n=5), severe depression (n=4), schizophrenia (n=2), personality disorder/impulse control disorder (n=4), anxiety/adjustment disorder/obsessive-compulsive disorder/trauma (n=5) and ADHD (n=3). Mean age in the group of problematic gamers was 25.3 years (SD=7.2). Particularly items 1 (preoccupation, n=9), 6 (continuation, n=12) and 8 (escape, n=10) were stated to occur “often” by a high number of the 15 problematic gamers.

In an explorative approach, frequencies of IGDT10 responses in the small sample of problematic gamers and the bigger sample of non-problematic gamers are summarised in Figure 2. Regarding problematic gamers, the four symptoms: preoccupation with gaming, giving up other activities, continuing to play despite problems and escaping aversive mood with gaming were each named by at least almost half of the participants to occur often. It is of interest, that in problematic gamers the response “often” regarding these four symptoms occurred more frequently than the response “sometimes”. „Escape“ was the item most frequently marked with „often“ in non-problematic gamers.

Discussion

We present results from a survey designed to screen for problematic gaming behavior in a clinical sample. The survey was conducted as an explorative naturalistic approach in an outpatient psychiatric setting over a 6-month period in 2021 during the COVID-19 pandemic. We intended to identify the prevalence of previously defined subgroups of problematic gamers as well as related demographics including age, gender and comorbid psychiatric diagnoses. Further, we were interested to investigate whether any individual criteria as suggested by ICD-11 and DSM-5 could be more helpful than others to single out patients needing therapeutic support.

From the 1818 outpatients that came to seek therapy during the 6-month period investigated, 299 participated in the survey. Participants in the survey were significantly younger than the outpatient sample. Regarding Gamers and Non-Gamers, we found no differences in psychiatric diagnosis, which is in line with suggestions that gaming itself should not be categorized as an essentially problematic behavior (Király, Tóth et al., 2017). However, we found participants with ADHD overrepresented and participants with schizophrenia underrepresented in the participants of the survey as compared to the whole outpatient population. Here, we assume diagnoses-related differences in the willingness to participate in a survey in the sample investigated due to higher levels of suspiciousness in schizophrenia. However, ADHD has been reported to be linked to higher prevalence of gaming in children before (Masi et al., 2021).

Table 1. Demographics of problematic gamers

Patient number	Gender	Age in years	Diagnoses	IGDT10 items with response „often“	IGDT10 items with response „sometimes“	Cut-off for IGD IGDT10 > 4	gamers at risk IGDT10 = 4	Subjective impairment due to gaming
1	male	28	SZ, PD	1, 2, 3, 5, 6, 8	9	yes	-	*
2	male	45	ADD, Adj	2, 3, 6, 7, 8	4, 9, 10	yes	-	yes
3	male	24	sMD, PD	1, 4, 5, 6, 7, 8, 10	2, 9	yes	-	yes
4	male	18	sMD, PTSD	1, 4, 6, 7, 8, 10	2, 3	yes	-	yes
5	female	31	PD, MD	1, 2, 6, 8, 9, 10	4, 5, 7	yes	-	yes
6	male	26	SZ	1, 3, 5, 6, 7	2, 4, 10	yes	-	yes
7	male	21	MD, ADD	2, 5, 8, 10	1, 3, 4, 6, 7	no	yes	yes
8	male	20	Adj	5,6,8,10	1, 3, 4, 7	no	yes	no
9	male	23	OCD	1,2,6,7		no	yes	no
10	male	28	ADD, sMD	1,3,5,6	2,7,8	no	yes	no
11	male	18	MD, ADHD	1,5,6,8	2,4,7	no	yes	*
12	male	27	ADD, ADHD	6, 8	1, 5, 7, 10	no	no	yes
13	male	21	ICD		1, 3, 4, 6, 7, 8	no	no	yes
14	male	18	MD, ADHD	1, 3, 6	2, 4, 5, 8, 10	no	no	yes
15	female	32	sMD	4, 8	3, 5	no	no	yes

Notes. IGDT10: Ten Items Internet Gaming Disorder Test; IGD: Internet Gaming Disorder; SZ: Schizophrenia; PD: Personality Disorder; ADD: Addictive Disorder; PTSD: Posttraumatic Stress Disorder; Adj: Adjustment Disorder; MD: mild/moderate Major Depression; sMD: severe Major Depression; ADHD: Attention Deficit Hyperactivity Disorder; ICD: impulse control disorder, OCD: obsessive compulsive disorder. * no response to question. IGDT-10 items and corresponding DSM-5 criteria: 1 – Preoccupation, 2 – Withdrawal, 3 – Tolerance, 4 – Loss of control, 5 – Loss of interests, 6 – Continued use, 7 – Deception, 8 – Escape, 9 – Jeopardized life (corresponding to IGDT-10 criteria 9 and 10).

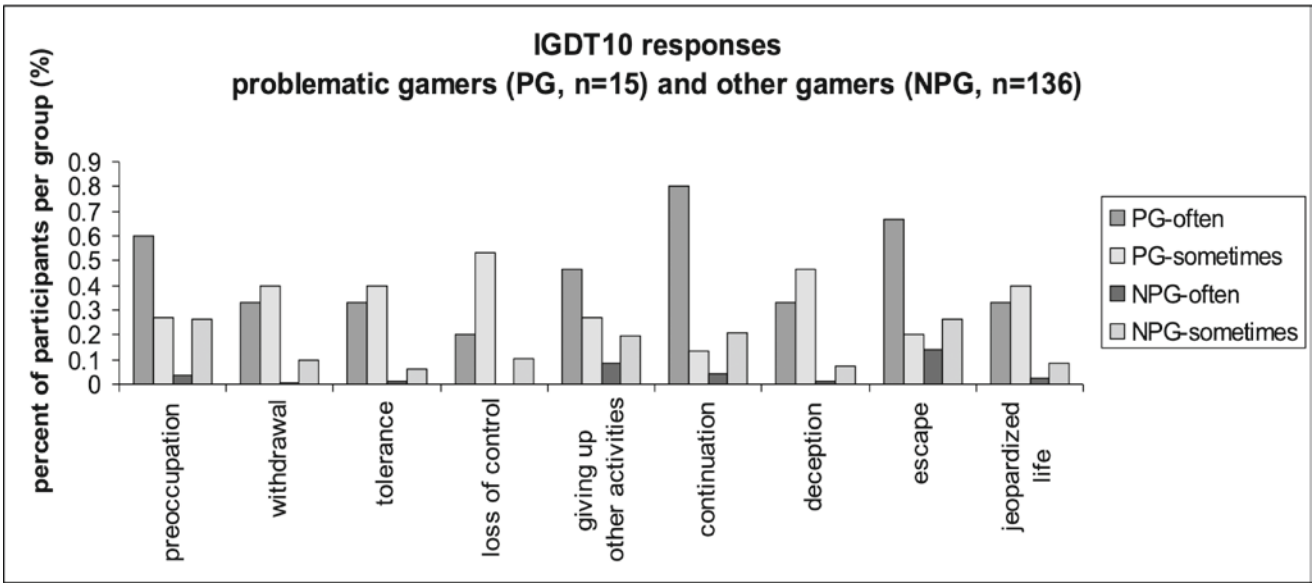

Figure 2. IGDT10 responses corresponding to DSM-5 criteria in problematic (PG) and non-problematic gamers (NPG). Dark greyscale: symptom stated to occur often; light greyscale: symptom stated to occur sometimes.

Of the participants in the survey, 15 patients were identified as problematic gamers because they reached 4 features (gamers at risk, n=5) respectively more than 4 features in the IGDT10 (IGD, n=6) and/or stated stress or impairment because of gaming (n=10). A prevalence between 2.0 % (IGD) and 5.0 % (problematic gamers) as found in our investigation matches the prevalence in the general population according to the above mentioned cross-national representative survey from Müller et al. (2015) and the metanalysis of global prevalence from Stevens et al (2021) as well as that found for a German sample of psychosomatic outpatients (Wölfling et al., 2022). However, in an adolescent psychiatric inpatient sample, the prevalence of IGD was assessed much higher (6.00 % to 12.79 %) (Gauthier et al., 2020).

Mean age in problematic gamers was lower (M=25.3 years) than in the whole gamers-sample (M=29.1), and mostly male (13 out of 15). There is a wide agreement in the literature that male gamers are more frequently affected by IGD (Mihara & Higuchi, 2017; Paulus et al., 2018; Severo et al., 2020; Wartberg et al., 2020; Wichstrøm et al., 2019). An obvious reason is the higher share of males among gamers (Cruea & Park, 2012; Macur & Pontes, 2021; Strittmatter et al., 2015). However, neurobiological differences could also contribute to increased rates of IGD in males. In this vein, a systematic review by Paulus et al (2018) suggested that sex differences in activation and connectivity of brain regions associated with the mesocorticolimbic reward system could promote the development of addictive behaviors in males.

There is few evidence about the effect of age on the development of IGD in adults. Mihara & Higuchi (2017) offer an overview of 37 cross-sectional and 13 longitudinal epidemiological studies of IGD. 14 studies included participants older than 18 years. In 4 of these (mostly representative European samples), the prevalence of IGD/GD decreased with older age. In the above-mentioned review of worldwide IGD prevalence, however, Darvesh et al. (2020) found a prevalence of 0.21–55.77 % in adults (18 years and older) and 0.26–38.00 % in children and adolescents (0–19 years). In a representative German sample of 12–25-years-olds recruited via an online questionnaire by the market and opinion research institute Forsa, participants with IGD were significantly younger than the whole general population sample (M= 15.6, SD=3.7 versus M=19.1, SD=4.0) with 8.4 % males and 2.9 % females affected (Wartberg et al., 2017).

Analyzing differences in IGDT10 response frequencies between problematic gamers and the other non-problematic gamers, we found a pattern that could point towards diagnostic criteria that could be particularly helpful to single out patients in need for treatment. The IGDT10-items marked by problematic gamers with "often" most frequently were "continuation", "preoccupation", "escape" and "giving up other activities" with „escape", however, being also the item most frequently marked with „often" in non-problematic gamers. The latter observation matches the literature, stating that the item "escape" in DSM-5 might not sufficiently differentiate between patients with IGD and clients with non-problematic gaming behavior (e.g., engaged gamers) and may promote overpathologization (King, Delfabbro et al., 2020). The majority of problematic gamers rated the item "continuation" to occur often, an item with high expert appraisal by the before mentioned Delphi consortium (89.7 % agreement for very/extremely high diagnostic value) from Castro-Calvo et al. (2021). Meanwhile, "continuation" as well as the item "preoccupation" was only rarely rated to occur often by non-problematic gamers. It is of note, that none of the participants that reached the IGDT10 cut-off of 5 criteria fulfilled, suggesting a diagnosis of IGD, denied stress or impairment because of gaming. Thus, the assessment of the ICD-11 criterion of stress or impairment because of gaming might be particularly helpful for an initial screening in an outpatient setting. Interestingly, only one out of the 5 gamers at risk (IGDT10=4) indicated subjective impairment due to gaming. This finding might point towards a possible superiority of the diagnostic criteria proposed by ICD-11 in contrast to DSM 5 criteria, as covered by the IGDT10.

Some limitations of the investigation need to be considered. The naturalistic approach with no active recruitment strategy, where patients were simply offered to respond to a paper and pencil survey, might have led to the relatively low response rate of about 16 % of the whole outpatient population and to the overrepresentation of milder psychiatric diagnoses such as ADHD and an underrepresentation of more severe diagnoses such as schizophrenia. With participants being younger than the whole outpatient sample, this might further have led to an overestimation of the proportion of gamers, which, on the other side, might have been favorable for our intention to filter problematic gamers. Because of the selection bias in our sample, estimates of the prevalence of IGD in the whole outpatient sample must remain tentative and the generalizability of our results is limited. The assessment on the basis of a self-report might have been subject to the „social desirability" bias leading to underestimation of the prevalence of IGD. However, a study showed high correlations between self-report and expert face-to-face evaluation regarding the diagnosis of IGD (Yazdi et al., 2021). The fact that the outpatient clinic did not offer counselling for behavioral addictions explicitly may explain why during the period investigated, no patient presented her-/himself primarily for treatment of Gaming Disorder and why prevalence might be underestimated. Furthermore, the group of prob-

lematic gamers was too small to statistically compare the frequency of diagnosis with non-problematic gamers. Further studies on the prevalence of GD/IGD in clinical populations should focus on higher response rates to allow for more accurate estimates. Longitudinal sampling could help to evaluate the utility of screening instruments for clinical practice.

Conclusions for Practice

- Applying a naturalistic approach, we found a prevalence of IGD of 2% in a sample of 299 adult psychiatric outpatients.
- Our assessment confirmed previous findings that male gender and younger age are associated with more frequent (internet) gaming behavior and also a higher prevalence of symptoms of IGD.
- Analyses suggest that for an effective screening, particularly questions regarding stress or impairment because of gaming patterns could be helpful. The response pattern of problematic vs. non-problematic gamers partially supports previous literature judging items like "continuation" and "giving up other activities" as particularly valid, while the item "escape" might be of low clinical utility to differentiate between problematic and non-problematic gamers.
- The assessment of the ICD-11 criterion of stress or impairment because of gaming might be particularly helpful for an initial screening in an outpatient setting, suggesting some superiority compared to DSM 5 criteria as covered by the IGDT10.

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